IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF CONNECTICUT

UNITED STATES OF AMERICA,

Plaintiff,

v.

KAMAN AEROSPACE CORPORATION,

Defendant.

CIVIL ACTION NO. _____

CONSENT DECREE

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I. Background

A. Plaintiff, the United States of America ("United States"), on behalf of the United States Navy ("Navy"), filed a Complaint against Defendant, Kaman Aerospace Corporation ("Kaman"), in this matter pursuant to Section 107 of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. § 9607 (the "Complaint").

B. The United States in its Complaint seeks, inter alia, reimbursement of costs incurred by the Navy for response actions at the Naval Weapons Industrial Reserve Plant - Bloomfield ("Facility") in Bloomfield, Connecticut, together with accrued interest.

C. In accordance with Section 122(j)(1) of CERCLA, 42 U.S.C. § 9622(j)(1), the Navy notified the Secretary of the Interior on September 26, 2007 of negotiations with potentially responsible parties regarding the release of hazardous substances that may have resulted in injury to the natural resources under federal trusteeship and provided an opportunity for the trustee to participate in the negotiations of this Consent Decree.

D. Kaman denies the allegations in the United States' Complaint and asserts, inter alia, that the United States is liable for the costs it seeks from Kaman and for the performance of Response Actions at the Facility.

E. By entering into this Consent Decree, neither Kaman nor the United States admits any liability arising out of the transactions or occurrences alleged in the Complaint, nor do the Parties acknowledge that the release or threatened release of hazardous substances at or from the Facility constitutes an imminent or substantial endangerment to the public health or welfare or the environment. Nothing in this Consent Decree shall be construed as an admission of liability or fault as to any allegation or matter arising out of the pleadings or otherwise.

F. Prior to entry of this Consent Decree, the Navy conducted specific Response Actions, including the removal of contaminated soils within the former fire training area at the Facility, as described in the Workplan for Former Firefighter Training Area Soils Removal Action, Naval Weapons Industrial Reserve Plant, Bloomfield, Connecticut (TN & Associates, Inc., July 2005), the investigation of offsite groundwater quality, and the connection of one private drinking water well in the immediate vicinity of the Facility to the public water system.

G. Based on the information available to the United States, the United States believes that the Work (as defined below) will be properly and promptly conducted if the Work is conducted in accordance with the requirements of this Consent Decree.

H. The Parties recognize, and the Court by entering this Consent Decree finds, that this Consent Decree has been negotiated by the Parties in good faith and implementation of this Consent Decree will expedite the cleanup of the Facility and will avoid prolonged and complicated litigation between the Parties, and that this Consent Decree is fair, reasonable, and in the public interest.

NOW, THEREFORE, it is hereby Ordered, Adjudged, and Decreed:

II. Jurisdiction and Venue

1. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1345, and 42 U.S.C. § 9613(b), and venue is proper in this District pursuant to 28 U.S.C. § 1391 and 42 U.S.C. § 9613(b). This Court also has personal jurisdiction over the Parties. Solely for the purposes of this Consent Decree and the underlying Complaint, the Parties waive all objections and defenses that they may have to the jurisdiction of the Court or to venue in this District. The Parties shall not challenge the terms of this Consent Decree or this Court's

jurisdiction to enter and enforce this Consent Decree.

III. Parties Bound

2. This Consent Decree applies to and is binding upon the United States and upon Kaman and its successors and assigns. Any change in ownership or corporate status of Kaman, including, but not limited to, any transfer of assets or real or personal property, shall in no way alter Kaman's responsibilities under this Consent Decree without the express written consent of the United States.

IV. Definitions

3. Unless otherwise expressly provided herein, terms used in this Consent Decree that are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Consent Decree or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

"CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601, et seq.

"Closing Date" shall mean the date set for the transfer of title to the Facility pursuant to Paragraph 26.

"Connecticut Work Claim" shall mean any claim by the State of Connecticut, including any administrative or judicial action, seeking to compel the United States to perform, or to recover from the United States penalties and/or costs incurred for, Response Actions at or in connection with the Facility constituting Work required under this Consent Decree.

"Consent Decree" shall mean this Decree and all appendices attached hereto (listed in

Section XXIII). In the event of a conflict between this Decree and any appendix, this Consent Decree shall control.

"CTDEP" shall mean the Connecticut Department of Environmental Protection.

"Court" shall mean the United States District Court for the District of Connecticut.

"Day" shall mean a calendar day unless expressly stated to be a working day. "Working day" shall mean a day other than a Saturday, Sunday, or federal holiday. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or federal holiday, the period shall run until the close of business of the next working day.

"DOJ" shall mean the United States Department of Justice and any office or subdivision thereof and any successor department or agency of the United States.

"Effective Date" shall mean the effective date of this Consent Decree as provided in Section XXI.

"EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

"Facility" shall mean the Naval Weapons Industrial Reserve Plant - Bloomfield, consisting of approximately 85 acres of land located in Bloomfield, Connecticut, bordered to the north by East Newberry Road, to the southwest by Old Iron Ore Road, and to the southeast by Old Windsor Road, and depicted generally on the map attached as Appendix A, as well as all improvements indicated in the Offer to Purchase attached hereto as Appendix C.

"FFTA Soil Removal Action" shall mean the Navy Response Action to remove contaminated soils from the former fire fighter training area, in accordance with the Workplan

for Former Firefighter Training Area Soils Removal Action, Naval Weapons Industrial Reserve Plant, Bloomfield, Connecticut (TN & Associates, Inc., July 2005).

"Institutional Controls" shall mean appropriate limitations on land or resource use, including, but not limited to, easements, deed restrictions, and water use controls, that help minimize the risk of human exposure to pollutants and hazards to the environment, and shall include any "environmental use restriction," as defined by Conn. Gen. Stat. Ch. 445 § 22a-133n.

"Interest" shall mean interest at the rate determined pursuant to 28 U.S.C. § 1961.

"Kaman" shall mean Defendant, Kaman Aerospace Corporation.

"Kaman Response Action Work Plan" shall mean the draft work plan attached hereto as Appendix D.

"Navy" shall mean the United States Navy.

"Navy Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the Navy has paid or will pay in connection with the remediation of Waste Material at or originating from the Facility through the Closing Date, plus Interest on all such costs that has accrued or will accrue through the Closing Date, and any costs paid by the Navy after the Closing Date to complete the FFTA Soil Removal Action.

"Paragraph" shall mean a portion of this Consent Decree identified by an Arabic numeral or an upper case letter.

"Parties" shall mean the United States and Kaman.

"Response Actions" shall mean all past, present, and future response actions, as defined in Section 101(25) of CERCLA, 42 U.S.C. § 9601(25), taken in connection with the release or threatened release of Waste Materials at or from the Facility prior to the Closing Date.

"Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that a Party has paid or will pay in connection with the implementation of Response Actions.

"Section" shall mean a portion of this Consent Decree identified by a Roman numeral.

"State of Connecticut," "State," or "Connecticut" shall mean the State of Connecticut and any department, agency, or subdivision thereof.

"United States" shall mean the United States of America, including all of its departments, agencies, and instrumentalities.

"Transfer Act" shall mean the Connecticut Transfer Act, Conn. Gen. Stat. Ch. 445 § 22a-134, et seq.

"Waste Material" shall mean: (1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (2) any pollutant or contaminant under Section 101(33), 42 U.S.C. § 9601(33); (3) any "solid waste" under Section 1004(27) of the Resource Conservation and Recovery Act, 42 U.S.C. § 6903(27); and (4) any "hazardous waste" under Conn. Gen. Stat. Ch. 445 § 22a-115(1) or "hazardous substance" under Conn. Gen. Stat. Ch. 445 § 22a-134(24).

"Work" shall mean all activities Kaman is required to perform under Section VI of this Consent Decree.

V. General Provisions

4. Objectives of the Parties. The objectives of the Parties in entering into this Consent Decree are to protect public health or welfare or the environment at the Facility through the implementation of the requirements of this Consent Decree in conjunction with the transfer of title to the Facility from the United States to Kaman, and to resolve the claims of the United

States against Kaman and the claims of Kaman that could have been asserted against the United States with regard to the Facility as provided in this Decree.

5. Commitments of the Parties. Kaman shall finance and perform the Work, as provided for and in accordance with this Consent Decree, and shall comply with all other requirements of the Decree. The United States shall transfer title to the Facility to Kaman in accordance with Section XI of this Decree, as consideration for Kaman's agreement to perform the Work.

6. Compliance With Applicable Law. All activities undertaken by Kaman pursuant to this Consent Decree shall be performed in accordance with the requirements of all applicable laws and regulations, including laws and regulations promulgated following the Effective Date of this Decree.

7. Permits. This Consent Decree is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation. Where any portion of the Work requires a federal, state, or local permit or approval, Kaman shall take all actions necessary to obtain all such permits or approvals in a timely manner.

8. Notice to Successors-in-Title.

a. Within 15 days after the Closing Date, Kaman shall submit to the Navy and CTDEP for review and approval a notice to be filed with the Town Clerk, Town of Bloomfield, Hartford County, State of Connecticut, which shall provide notice to all successors-in-title that Kaman has entered into a Consent Decree with respect to the Facility. Such notice shall identify the United States District Court in which the Consent Decree was filed, the name and civil action number of this case, and the date the Consent Decree was entered by the Court.

Kaman shall record the notice within 10 days of approval of the notice by both the Navy and CTDEP. Kaman shall provide the Navy and CTDEP with a certified copy of the recorded notice within 10 days of recording such notice.

b. At least 30 days prior to the conveyance of any fee interest or leasehold interest in property located within the Facility, Kaman shall give the prospective grantee written notice of this Consent Decree. At least 30 days prior to such conveyance, Kaman also shall give written notice to the Navy of the proposed conveyance, including the name and address of the prospective grantee, and the date on which notice of the Consent Decree was given to the grantee.

c. Regardless of any such conveyance, Kaman shall continue to meet its obligations under this Consent Decree, including, but not limited to, the obligation to record and maintain any Institutional Controls and the obligation to provide access pursuant to Section VII. The obligations to maintain any Institutional Controls and to provide access may be met by 1) the recording of appropriate easements, deed restrictions, and environmental use restrictions placed on the land records of the Town of Bloomfield, Hartford County, State of Connecticut, and 2) making the obligations to maintain any Institutional Controls and to provide access a requirement of the transferee in any transfer agreement. In no event shall any conveyance of title to the Facility release or otherwise affect Kaman's obligations under this Consent Decree, absent the prior written consent of the United States. If the United States so approves in writing in advance of any conveyance, the grantee of such conveyance may perform some or all of the Work in accordance with the terms and conditions of this Consent Decree.

VI. Performance of the Work

9. Effective on the Closing Date, and subject to the provisions of Paragraph 11 regarding the FFTA Soil Removal Action, Kaman will assume full responsibility for all environmental investigation, characterization, remediation, maintenance, and monitoring with respect to the Facility necessary to satisfy CTDEP with respect to all applicable "remediation standards" promulgated pursuant to Conn. Gen. Stat. Ch. 445 § 22a-133k, including all applicable "remediation standards" promulgated following the Effective Date of this Decree. Such responsibility shall include, but not be limited to, complying fully with all requirements of the Transfer Act, Conn. Gen. Stat. Ch. 445 § 22a-134, et seq. In compliance with the Transfer Act, Kaman shall prepare, sign, and file with CTDEP a "Form III" and "Environmental Condition Assessment Form" as the "Certifying Party," as such terms are defined under the Transfer Act, Conn. Gen. Stat. Ch. 445 § 22a-134, and will be responsible for all fees and expenses associated with the preparation and filing of a Form III. For purposes of this Consent Decree, only, the United States shall sign the Form III solely in its capacity as Transferor of the Facility and shall have no further obligations under the Transfer Act; provided, however, that by signing the Form III, the United States does not acknowledge that it is subject to the jurisdiction of the Transfer Act. The Kaman Response Action Work Plan, attached hereto as Appendix D, represents Kaman's plan, as of the Effective Date of this Consent Decree, for meeting its remedial obligations under the Consent Decree. However, Kaman's compliance with the Kaman Response Action Work Plan will not necessarily constitute full compliance with the requirements of this Consent Decree. Kaman's obligation is to complete whatever environmental remediation of the Facility is necessary to satisfy CTDEP with respect to all applicable laws and regulations,

including laws and regulations promulgated following the Effective Date of this Decree, and further including, but not limited to, complying fully with all requirements of the Transfer Act. Except with respect to rights reserved by the United States in Section XV, Kaman shall be overseen by only CTDEP with respect to its performance of the Work pursuant to this Consent Decree, and shall have the right to negotiate with CTDEP, to propose, negotiate and implement appropriate Response Actions, cleanup goals, and/or remediation standards, and to contest any Response Actions required by CTDEP that Kaman believes are not required by applicable law.

10. In accordance with the Transfer Act, Conn. Gen. Stat. Ch. 445 § 22a-134a, within 75 days after Kaman receives notice from CTDEP that the Form III is complete or such later date as may be approved in writing by the CTDEP under the Transfer Act, Kaman shall submit to CTDEP a written schedule for conducting the investigation and remediation of the Facility. Unless CTDEP requires an alternative schedule for compliance, the schedule shall provide for: (i) the investigation to be complete within two years of the date of receipt of the notice from CTDEP; and (ii) the remediation to be initiated within three years of the date of receipt of such notice. In accordance with Conn. Gen. Stat. Ch. 445 § 22a-134a, the schedule shall include, at a minimum:

a. An overall projected schedule for completing the investigation and initiating and performing the remediation, including, if appropriate, operation and maintenance of the remedial activities, monitoring natural attenuation, and/or post-remediation groundwater monitoring;

b. A schedule for preparing and submitting scopes of work, technical plans, technical reports, and progress reports on the investigation and remediation;

c. A preliminary list of any environmental use restrictions or other Institutional Controls that may be considered as part of the final remediation; and

d. A plan for providing public notice of any final remediation prior to the initiation of such remediation.

11. Except as provided herein with respect to the FFTA Soil Removal Action, Kaman will perform fully all components of the Response Actions required by CTDEP to comply with the Transfer Act and any other applicable law or regulation, including, but not limited to, any necessary soil or groundwater treatment, all necessary maintenance and monitoring of remedial measures, and the implementation of any Institutional Controls. Neither the $6 million limit on Kaman's indemnification of the United States pursuant to Paragraph 33 nor the amount of the Performance Guarantee pursuant to Section X, as of the Closing Date or at any time in the future, shall limit Kaman's overall obligation to complete the Work pursuant to this Section. The Navy shall complete the FFTA Soil Removal Action. For purposes of this Consent Decree, the FFTA Soil Removal Action shall be complete when the Navy completes the work specified in the Workplan for Former Firefighter Training Area Soils Removal Action, Naval Weapons Industrial Reserve Plant, Bloomfield, Connecticut (TN & Associates, Inc., July 2005) and submits the Final Soil Closure Report to CTDEP, and CTDEP approves the FFTA Soil Removal Action in writing. In the event that CTDEP determines at a later date that the soil above the water table at the FFTA has not been remediated in compliance with the applicable industrial/commercial and pollutant mobility criteria "remediation standards" promulgated pursuant to Conn. Gen. Stat. Ch. 445, § 22a-133k, the Navy agrees to complete such remediation, which will be complete when CTDEP so indicates in writing. Nothing in this Consent Decree is intended or should be

interpreted to require any obligation or expenditure of funds in violation of the Anti-Deficiency Act, 31 U.S.C. § 1341.

12. Within 90 days after Kaman concludes that the active remediation portion of the Work has been fully performed, Kaman shall schedule and conduct a pre-certification inspection to be attended by Kaman, the Navy, and CTDEP at a time that is mutually convenient for all three parties. If, after the pre-certification inspection, Kaman still believes that the active remediation portion of the Work has been fully performed, Kaman shall submit to the Navy in accordance with Section XX and with a copy to CTDEP a written report by a Licensed Environmental Professional stating that the active remediation portion of the Work has been completed fully in satisfaction of the requirements of this Consent Decree. The report shall contain the following statement, signed by a responsible corporate official of Kaman:

> To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If, after review of the written report, the Navy determines that any portion of the active remediation portion of the Work has not been completed in accordance with this Consent Decree, the Navy will so notify Kaman in writing and explain the basis for its determination. Kaman shall perform all activities necessary to complete the active remediation portion of the Work in accordance with this Consent Decree, subject to its right to invoke the dispute resolution procedures set forth in Section XIV. If the Navy concludes, based on the initial or any subsequent request by Kaman and after a reasonable opportunity for review and comment by CTDEP, that the active remediation portion of the Work has been performed in accordance with

this Consent Decree, the Navy will so notify Kaman in writing within 60 days after the Navy's receipt of Kaman's written report and CTDEP's comments. For purposes of this Paragraph, post-remedial groundwater monitoring and monitoring of natural attenuation will not be considered "active remediation." Notification by the Navy pursuant to this Paragraph does not affect Kaman's obligations under this Consent Decree to conduct post-remediation or natural attenuation groundwater monitoring, or any other Work required under this Consent Decree.

13. In the event that the State of Connecticut initiates any administrative or judicial enforcement action against Kaman, pursuant to the Transfer Act or any other federal, state, or common law authority, in connection with the investigation or remediation of the Facility, Kaman shall notify the United States in writing of such action within fifteen (15) days of the initiation of such action.

VII. Access

14. Commencing on the Closing Date, Kaman shall provide the Navy and its representatives with access at all reasonable times to the Facility, or any other property where access is needed to perform any Response Work related to the FFTA Soil Removal Action or to review or monitor the Work; provided, however, that Kaman may restrict access to areas within the Facility where trade secret and proprietary commercial confidential operations are being conducted, unless access to such areas is necessary to review or monitor the Work, in which case the Navy will treat all information obtained in the course of such access as confidential business information, pursuant to applicable regulations. The Navy agrees that it will provide reasonable notice to, and coordinate with, Kaman in advance of any planned visit to the Facility, and will use reasonable efforts to avoid interfering with Kaman's operations. The Navy will attempt to

notify Kaman a minimum of 48 hours in advance of any planned visit to the Facility.

15. Notwithstanding any provision of this Consent Decree, the United States retains all of its access authorities and rights, including enforcement authorities related thereto, under CERCLA and any other applicable statute or regulations.

VIII. Reporting Requirements

16. Kaman shall provide to the Navy a complete copy of the final, approved Response Action Work Plan, and of all scopes of work, technical plans, technical reports, and progress reports that Kaman submits to CTDEP in connection with the performance of the Work, as well as CTDEP's responses to such submissions. Documents submitted by Kaman shall be provided to the Navy at the same time that it submits such documents to CTDEP. If CTDEP does not copy the Navy on any written response to a Kaman submittal, Kaman shall send any such CTDEP response to the Navy within fifteen (15) days of receipt of the CTDEP response.

IX. Project Coordinators

17. On the Closing Date, Kaman and the Navy will notify each other, in writing, of the name, address, and telephone number of its respective designated Project Coordinator. If a Project Coordinator initially designated is changed, the identity of the successor will be given to the other Party at least five working days before the change occurs, unless impracticable, but in no event later than the actual day the change is made.

18. The Navy's Project Coordinator and Kaman's Project Coordinator will communicate, in person or via conference call, upon the Navy Project Coordinator's request and at the convenience of both Coordinators.

X. Performance Guarantee

19. To assure performance of the Work required by this Consent Decree, Kaman has established and will maintain in the amount of $6.2 million a Performance Guarantee consisting of a written guarantee executed in favor of the United States by Kaman Aerospace Group, Inc. (the "Guarantor"). The written guarantee, which shall become effective upon the Closing Date, is attached hereto as Appendix B. Except pursuant to Paragraph 24, Kaman may not change the form or amount of the Performance Guarantee. In accordance with the terms and conditions of the Performance Guarantee documents, the United States may direct that funds otherwise payable to the United States may be paid directly to the State of Connecticut, at the United States' discretion. In addition, any Performance Guarantee mechanism used to comply with this Consent Decree may identify the CTDEP, in addition to the Navy, as a beneficiary of the Performance Guarantee.

20. Kaman warrants that the financial reports and statements from the Guarantor's chief financial officer and independent certified public accountant that it has submitted prior to the Effective Date in accordance with this Consent Decree are complete and accurate and comply with the relevant requirements of 40 C.F.R. §§ 264.143(f), 264.151(f), and 264.151(h)(1). Kaman shall continue to comply with the relevant requirements of 40 C.F.R. §§ 264.143(f), 264.151(f), and 264.151(h)(1), including, but not limited to, the annual re-submission of such reports and statements within 90 days after the close of the Guarantor's fiscal year. The Parties acknowledge that the wording of the performance guarantee documents may differ from the wording set forth in 40 C.F.R 264.151 as necessary to reflect the purpose and requirements of this Consent Decree.

21. In the event that the Navy determines at any time that the Performance Guarantee provided by Kaman pursuant to this Section no longer satisfies the requirements set forth in this Section, or in the event that Kaman becomes aware of information indicating that the Performance Guarantee provided pursuant to this Section no longer satisfies the requirements set forth in this Section, Kaman, within 30 days of receipt of notice of the Navy's determination or, as the case may be, within 30 days of Kaman becoming aware of such information, shall obtain and present to the Navy for approval, in accordance with Section XX, one or more of the following alternative forms of Performance Guarantees:

a. a surety bond unconditionally guaranteeing performance of the remaining Work that is issued by a surety company among those listed as acceptable sureties on federal bonds as set forth in Circular 570 of the United States Department of the Treasury;

b. one or more irrevocable letters of credit, payable to or at the direction of the Navy, that is issued by one or more financial institution(s) (i) that has the authority to issue letters of credit, and (ii) whose letter-of-credit operations are regulated and examined by a federal or state agency;

c. a trust fund established for the benefit of the Navy that is administered by a trustee (i) that has the authority to act as a trustee, and (ii) whose trust operations are regulated and examined by a federal or state agency;

d. a policy of insurance that (i) provides the Navy with acceptable rights as a beneficiary thereof, and (ii) is issued by an insurance carrier that has the authority to issue insurance policies in the applicable jurisdiction and whose insurance operations are regulated and examined by a state agency; or

e. a written guarantee executed in favor of the Navy by a direct or indirect parent company of Kaman, or by a firm with a substantial business relationship with Kaman; provided, however, that any company providing such a guarantee must demonstrate to the satisfaction of the Navy that it satisfies the financial test requirements of 40 C.F.R. § 264.143(f) with respect to the estimated cost of the remaining Work to be performed.

22. In seeking approval for an alternative form of Performance Guarantee, Kaman shall follow the procedures set forth in Paragraph 24.c.ii. Kaman's inability to post a Performance Guarantee for completion of the Work shall in no way excuse performance of any other requirements of this Consent Decree, including, without limitation, Kaman's obligation to complete the Work.

23. In the event that Kaman, for any reason, fails to perform the Work required by this Consent Decree and the United States or the State of Connecticut is required to assume performance of a portion or all of the Work, the United States and/or the State shall have immediate access to the resources guaranteed under any Performance Guarantee provided pursuant to this Section, as provided for by the terms and conditions of the Performance Guarantee documents.

24. Modification of Amount and/or Form of Performance Guarantee.

a. Reduction in Amount of Performance Guarantee. Upon final CTDEP approval of the Kaman Response Action Work Plan, on any anniversary of the Effective Date of this Consent Decree, or at any other time agreed to by the Parties, Kaman may petition the Navy in writing, with a copy to CTDEP, to reduce the amount of the Performance Guarantee. The amount of the Performance Guarantee shall be equal to the estimated cost of the Work remaining

to be performed at the time of the request. In seeking approval for a reduction in the amount of the Performance Guarantee, Kaman shall follow the procedures set forth in Paragraph 24.c.ii. If the Navy decides to accept such a proposal, it shall notify Kaman of such decision in writing. After receiving the Navy's written acceptance, Kaman may reduce the amount of the Performance Guarantee in accordance with and to the extent permitted by such written acceptance.

b. Increase in Amount of Performance Guarantee. If, for any reason, including, but not limited to, a determination by CTDEP that additional Work is necessary, the estimated cost of the Work remaining to be performed rises above the amount of the current Performance Guarantee, Kaman shall, within 30 days of CTDEP's determination that additional Work is necessary or, if no such determination has been made, within 90 days after the close of the Guarantor's fiscal year, submit a proposal to increase the Performance Guarantee, in accordance with the procedure set forth in Paragraph 24.c.ii, to an amount equal to the estimated cost of the Work remaining to be performed, no matter what the amount of such estimated cost.

c. Change of Form of Performance Guarantee.

i. On any anniversary of the Effective Date of this Consent Decree, or at any other time agreed to by the Parties, Kaman may petition the Navy in writing to request a change in the form of the Performance Guarantee. Kaman may request a change to only one or more of the forms of Performance Guarantee listed in Paragraph 21. In seeking approval for a revised or alternative form of Performance Guarantee, Kaman shall follow the procedures set forth in Paragraph 24.c.ii

ii. Kaman shall submit a written proposal for a revised or alternative

form of Performance Guarantee to the Navy, which shall specify, at a minimum: (a) the estimated cost of the Work remaining to be performed at the time of the submission; (b) the basis upon which such cost was calculated; and, if applicable, (c) the proposed revised form of Performance Guarantee, including all proposed instruments or other documents required in order to make the proposed Performance Guarantee legally binding, and an explanation of the reason for the proposed change. The proposed revised or alternative form of Performance Guarantee must satisfy all requirements set forth or incorporated by reference in this Section. Within ninety (90) days of receipt, the Navy shall notify Kaman in writing of its decision to accept or reject a revised or alternative Performance Guarantee submitted pursuant to this subparagraph. Within thirty days of receiving a written decision approving the proposed revised or alternative Performance Guarantee, Kaman shall submit to the Navy, in accordance with Section XX, all executed and/or otherwise finalized instruments or other documents required in order to make the selected Performance Guarantee legally binding. Kaman may not use any amount of the Performance Guarantee to satisfy any liability pursuant to Section XIII (Indemnification). Similarly, Kaman may not rely on the indemnification provisions of Section XIII to satisfy any Performance Guarantee obligation pursuant to this Section.

XI. Transfer of the Facility

25. In consideration for the commitments by Kaman in this Consent Decree, the United States agrees to transfer to Kaman, and Kaman agrees to accept, the United States' title to and interest in the Facility. The specific terms of the transfer are contained in the Offer to Purchase attached hereto as Appendix C. Kaman's obligations under this Consent Decree shall be contingent upon the transfer of title to the Facility.

26. The Parties mutually will schedule the Closing Date for the transfer of the Facility to take place no more than 30 days following the Effective Date of this Consent Decree, unless the Parties mutually agree to a later date. In the event that the Closing Date does not occur prior to the expiration of Kaman's lease for the Facility, the lease shall be extended upon the same terms and conditions until the Closing Date.

XII. Kaman's Warranties Against Recovery of Certain Costs Incurred

27. This Section applies whether Kaman, individually, as a joint venture partner, or under a Teaming agreement, is functioning as a prime contractor or subcontractor. For purposes of this Section:

a. "Federal Contract" shall mean any contract or agreement, including, but not limited to, contracts awarded under the Foreign Military Sales Program, firm fixed price contracts, and cost plus contracts, with a department, agency, or instrumentality of the United States;

b. "Consent Decree Unallowed Expenses" shall mean the first $7.8 million of otherwise allowable and allocable costs or expenses that Kaman incurs for the performance of the Work, or to otherwise comply with this Consent Decree, which expenses include, but are not limited to, any Work-related expenditures that are capitalized as the cost of non-depreciable assets pursuant to purchase accounting principles, and any environmental insurance purchased to cover any Work related expenditures or liabilities. To reflect in its accounting records the transfer of government land identified pursuant to Section XI, Kaman will record some portion of the anticipated cost to be incurred to perform the Work, or to otherwise comply with this Consent Decree, as the cost of acquiring the land and buildings. Regardless of the value recorded as the

cost of the land and buildings, the first $7.8 million of actual expenses incurred to perform the Work, or to otherwise comply with this Consent Decree, will be treated as "mutually agreed to be unallowable" costs subject to Part 31 of the Federal Acquisition Regulations ("FAR") and the Cost Accounting Standards ("CAS") at 48 C.F.R. § 9904, and will not be included in any billing, claim, or proposal applicable to a Federal Contract, including, but not limited to, any final billing, final contract cost proposal, or final overhead rate proposal. Accordingly, depreciation expense reflecting the amortization of the recorded cost of the depreciable property acquired in this transaction shall be treated as a "mutually agreed to be unallowable" cost within the contractor's overhead and G&A pool of expenses;

c. "Excess Costs" shall mean costs Kaman incurs for the performance of the Work pursuant to this Consent Decree in excess of any Consent Decree Unallowed Expenses; and

d. "Third-Party Reimbursement" shall mean any payment Kaman receives, after subtracting costs otherwise allowable pursuant to Part 31 of the FAR incurred to obtain such payment, whether through insurance, contract, or other claims against any persons or entities other than the United States, for reimbursement of costs Kaman incurs for the performance of the Work pursuant to this Consent Decree.

28. Kaman's Warranty Against Seeking Or Receiving Payment For Consent Decree Unallowed Expenses. Subject to the penalties of the False Claims Act, 31 U.S.C. § 3729 et seq., and other applicable law, Kaman will not seek or receive, in any Federal Contract, reimbursement from the United States of any Consent Decree Unallowed Expenses. Kaman further agrees, with regard to any Federal Contract, that:

(i) any Consent Decree Unallowed Expenses shall be deemed to be, and shall be identified in Kaman's accounting system as, "mutually agreed to be unallowable" costs subject to FAR § 31.201-6 and CAS § 405 (including any subsequent amendments or modifications to FAR § 31.201-6 and CAS § 405), and thus excluded from any billing, claim, or proposal applicable to a Federal Contract, including, but not limited to, any final billing, final contract cost proposal, or final overhead rate proposal;

(ii) Kaman shall not claim or receive any Consent Decree Unallowed Expenses as allowable costs pursuant to a Federal Contract;

(iii) Kaman shall not claim or receive payment for any Consent Decree Unallowed Expenses pursuant to any indemnification or hold-harmless provision in any Federal Contract;

(iv) Kaman shall comply with CAS § 405 (including any subsequent amendments or modifications to CAS § 405) when accounting for any Consent Decree Unallowed Expenses in any billing, claim, or proposal applicable to a Federal Contract; and

(v) Any Consent Decree Unallowed Expenses included by Kaman in any billing, claim, or proposal applicable to a Federal Contract shall be deemed to be costs that have been "determined to be unallowable" within the meaning of FAR § 42.709-1, clause 52.242-3, and related provisions.

29. In the event that Kaman seeks reimbursement pursuant to a Federal Contract of any costs in excess of the Consent Decree Unallowed Expenses incurred for the performance of the Work, Kaman must comply with all applicable statutes and regulations. The United States

makes no determination at this time concerning the allowability of any costs over and above the Consent Decree Unallowed Expenses. The determination of whether such costs are allowable will be made in accordance with applicable regulations at the time of the request, including CAS, FAR, and the Defense Federal Acquisition Regulations. The United States reserves the right to review and/or audit, and disallow, if necessary, the costs that Kaman claims are the Consent Decree Unallowed Expenses to determine that they were allocable and allowable.

30. Kaman's Warranty Against Double Recovery for Excess Costs. For purposes of this Section, in the event that Kaman receives any Third-Party Reimbursement, such payment shall be considered reimbursement for Kaman's Excess Costs. Kaman shall not realize a double recovery, i.e., duplicative payment, additional payment, or additional reimbursement, with regard to any Excess Costs. Subject to the penalties of the False Claims Act, 31 U.S.C. § 3729 et seq., and other applicable law, Kaman will not seek or receive, in any Federal Contract, reimbursement from the United States of any Excess Costs for which Kaman has received a Third-Party Reimbursement. Kaman further agrees, with regard to any Federal Contract, that:

(i) Any Excess Costs for which Kaman has received a Third-Party Reimbursement shall be deemed to be, and shall be identified in Kaman's accounting system as, "mutually agreed to be unallowable" costs subject to FAR § 31.201-6 and CAS § 405 (including any subsequent amendments or modifications to FAR § 31.201-6 and CAS § 405), and thus excluded from any billing, claim, or proposal applicable to a Federal Contract, including, but not limited to, any final billing, final contract cost proposal, or final overhead rate proposal;

(ii) Kaman shall not claim or receive any Excess Costs for which it has received a

Third-Party Reimbursement as allowable costs pursuant to a Federal Contract;

(iii) Kaman shall not claim or receive payment for any Excess Costs for which it has received a Third-Party Reimbursement pursuant to any indemnification or hold-harmless provision in any Federal Contract;

(iv) Kaman shall comply with CAS § 405 (including any subsequent amendments or modifications to CAS § 405) when accounting for any Excess Costs for which it has received a Third-Party Reimbursement in any billing, claim, or proposal applicable to a Federal Contract; and

(v) Any Excess Costs for which Kaman has received a Third-Party Reimbursement included by Kaman in any billing, claim, or proposal applicable to a Federal Contract shall be deemed to be costs that have been "determined to be unallowable" within the meaning of FAR § 42.709-1, clause 52.242-3, and related provisions.

31. In the event that Kaman receives a Third-Party Reimbursement for any Excess Costs for which Kaman has received payment from the United States pursuant to any Federal Contract, Kaman shall repay the United States for any such payment(s) to Kaman by the United States.

XIII. Indemnification

32. Kaman's Indemnification of the United States for Claims Related to the Performance of the Work

a. Kaman shall indemnify, save, and hold harmless the United States and its officials, agents, employees, contractors, subcontractors, or representatives for or from any and

all claims or causes of action, including, but not limited to, personal injury or property damage claims, arising from, or on account of, negligent or other wrongful acts or omissions of Kaman, its officers, directors, employees, agents, contractors, subcontractors, and any persons acting on its behalf or under its control, in carrying out the Work pursuant to this Consent Decree. Further, Kaman agrees to pay the United States all actual costs that the United States incurs, including, but not limited to, attorneys fees and other direct and indirect litigation and settlement costs, arising from, or on account of, claims made against the United States based on negligent or other wrongful acts or omissions of Kaman, its officers, directors, employees, agents, contractors, subcontractors, and any persons acting on its behalf or under its control, in carrying out the Work pursuant to this Consent Decree. The United States shall not be held out as a party to any contract entered into by or on behalf of Kaman in carrying out the Work pursuant to this Consent Decree. Neither Kaman nor any such contractor shall be considered an agent or representative of the United States.

b. Kaman also shall indemnify and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between Kaman and any person for performance of the Work, including, but not limited to, claims on account of construction delays. In addition, Kaman waives all claims against the United States for damages or reimbursement, or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between Kaman and any person for performance of the Work, including, but not limited to, claims on account of construction delays.

c. This Paragraph shall not apply to Connecticut Work Claims. Paragraph 33 is the exclusive indemnification provision for such claims.

33. Kaman's Indemnification of the United States for Actions by the State of Connecticut. Kaman shall indemnify, save, and hold harmless the United States from any and all Connecticut Work Claims. Further, Kaman agrees to pay the United States all costs that the United States incurs, including, but not limited to, attorneys fees and other expenses of litigation and settlement, arising from, or on account of, Connecticut Work Claims. The total amount of any payments by Kaman to the United States pursuant to this Paragraph shall not exceed $6.0 million.

34. The United States shall give Kaman notice of any claim for which the United States plans to seek indemnification pursuant to this Section, and shall consult with Kaman prior to settling any such claim.

XIV. Dispute Resolution

35. Performance Guarantee Disputes. This Paragraph shall be the exclusive mechanism to resolve any disputes between the Parties under or with respect to Section X of this Consent Decree. However, the procedures set forth in this Paragraph shall not apply to actions by the United States to enforce obligations of Kaman that have not been disputed in accordance with this Section.

a. Any dispute which arises under or with respect to Section X of this Consent Decree shall in the first instance be the subject of informal negotiations between the Parties. The period for informal negotiations shall not exceed 20 days from the time the dispute arises, unless it is modified by written agreement of the Parties. The dispute shall be considered

to have arisen when one Party sends the other, in accordance with Section XX, a written Notice of Dispute.

b. Statements of Position.

i. In the event that the Parties cannot resolve a dispute by informal negotiations under subparagraph a. of this Paragraph, then the position advanced by the Navy shall be considered binding unless, within 30 days after the conclusion of the informal negotiation period, Kaman invokes the formal dispute resolution procedures of this Paragraph by serving on the Navy a written Statement of Position on the matter in dispute, including, but not limited to, any factual data, analysis, or opinion supporting that position and any supporting documentation relied upon by Kaman.

ii. Within 60 days after receipt of Kaman's Statement of Position, the Navy will serve on Kaman its Statement of Position, including, but not limited to, any factual data, analysis, or opinion supporting that position and all supporting documentation relied upon by the Navy. Within 15 days after receipt of the Navy's Statement of Position, Kaman may submit a Reply.

c. Formal dispute resolution.

i. An administrative record of the dispute shall be maintained by the Navy and shall contain all statements of position, including supporting documentation, submitted pursuant to this Paragraph. Where appropriate, the Navy may allow submission of supplemental statements of position by the Parties. At the request of Kaman, the Navy's decision-maker shall also allow oral argument by Kaman and the Navy in support of the Parties' respective positions.

ii. Following oral argument, if requested by Kaman, the Deputy

Assistant Secretary of the Navy (Environment) ("DASN(E)") will issue a final administrative decision resolving the dispute based on the administrative record described above. This decision shall be binding upon Kaman, subject only to the right to seek judicial review pursuant to provisions iii. and iv. below.

iii. Any administrative decision made by the Navy pursuant to provision ii. above shall be reviewable by this Court, provided that a motion for judicial review of the decision is filed by Kaman with the Court and served on the United States within 20 days of receipt of the Navy's decision. The motion shall include a description of the matter in dispute, the efforts made by the Parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of this Consent Decree. The United States may file a response to Kaman' motion.

iv. In proceedings on any dispute governed by this Section, Kaman shall have the burden of demonstrating that the decision of the DASN(E) is arbitrary and capricious or otherwise not in accordance with law. Judicial review of the Navy's decision shall be on the administrative record compiled pursuant to provision i. above.

d. The invocation of formal dispute resolution procedures under this Paragraph shall not extend, postpone, or affect in any way any obligation of Kaman under this Consent Decree not directly in dispute, unless the Navy or the Court agrees otherwise.

36. All Other Disputes. This Paragraph shall govern any dispute arising under this Consent Decree other than disputes with respect to Section X.

a. In the event of a dispute under or with respect to this Consent Decree, the Parties shall attempt to resolve such dispute through negotiation, mediation, or any other form of alternative dispute resolution as may be agreed to by the Parties at the time the dispute arises.

b. In the event that the Parties fail to resolve a dispute pursuant to the preceding subparagraph within a reasonable time, either Party may seek to enforce such rights and remedies as may be available to such Party, including, but not limited to, petitioning the Court to interpret and/or enforce any term of this Consent Decree.

c. Nothing in this Paragraph shall be construed to limit the right of a Party to initiate an action against the other Party for breach of this Consent Decree or to otherwise limit any right that either Party has or may have against the other Party.

XV. Covenants and Reservations of Rights by the United States

37. In consideration of the actions that will be performed by Kaman under the terms of this Consent Decree, and subject to the reservations in Paragraphs 38 and 39, the United States covenants not to sue, to take administrative action, or to otherwise to assert any claims against Kaman pursuant to Sections 106, 107(a), and 113 of CERCLA, or under any other legal or equitable theory, including contract claims, for the recovery of Navy Response Costs or other claims in connection with the release or threat of release of Waste Materials at or emanating from the Facility prior to the Closing Date. This covenant not to sue is conditioned upon the satisfactory performance by Kaman of its obligations under this Consent Decree. This covenant not to sue extends only to Kaman and does not extend to any other person.

38. Notwithstanding the covenant not to sue in Paragraph 37 of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, all rights against

Kaman with respect to all matters not expressly included within the covenant not to sue in Paragraph 37, including, but not limited to, the following:

a. claims based on a failure by Kaman to meet a requirement of this Consent Decree, including, but not limited to, a claim for administrative penalties pursuant to Section 122(l) of CERCLA, 42 U.S.C. § 9622(l);

b. liability arising from the past, present, or future disposal, release, or threat of release of Waste Material outside of the Facility, other than for Waste Material that was disposed of or released on the Facility prior to the Closing Date;

c. liability, arising after the Closing Date, based upon 1) Kaman's ownership or operation of the Facility, or 2) Kaman's transportation, treatment, storage, or disposal, or the arrangement for the transportation, treatment, storage, or disposal, of Waste Material at or in connection with the Facility;

d. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;

e. criminal liability;

f. liability for violations of federal or state law which occur during or after performance of the Work;

g. claims for the recovery of any costs that the United States incurs in the event that the United States has to perform all or any portion of the Work;

h. claims for indemnity pursuant to Section XIII of this Consent Decree; and

i. claims in the event that any third party asserts any claim against the United States in connection with Waste Material at or originating from the Facility at any time prior to the Closing Date.

39. In addition to the reservations in Paragraph 38, this Consent Decree in no way limits the ability of the United States, through the Environmental Protection Agency ("EPA"), to take any action authorized by law in connection with the Facility, and EPA reserves all rights and authority it has pursuant to CERCLA and any other provision of law with respect to the Facility.

40. Notwithstanding any other provision of this Consent Decree, the United States retains all authority and reserves all rights to take any and all response actions authorized by law.

XVI. Covenants and Reservations of Rights by Kaman

41. In consideration of the transfer of the Facility pursuant to Section XI, and except as set forth in Section XII and subject to the reservation of rights as set forth in this Section XVI, Kaman covenants not to sue or otherwise to assert any claims or causes of action against the United States pursuant to Sections 107(a) and 113 of CERCLA, or under any other legal or equitable theory, including contract claims, for the recovery of Response Costs or other claims in connection with the release or threat of release of Waste Materials at or emanating from the Facility prior to the Closing Date. This covenant not to sue includes, but is not limited to: 1) any direct or indirect claim for reimbursement from the Hazardous Substance Superfund (established pursuant to the Internal Revenue Code, 26 U.S.C. § 9507) through CERCLA Sections 106(b)(2), 107, 111, 112, 113, or any other provision of law; 2) any claims, including, but not limited to, claims for contribution or indemnification, against the United States under any federal or state law or common law, including claims based on past, present, and future contracts between

Kaman and the United States, seeking recovery of costs Kaman incurs in connection with the Facility; 3) any claims, including, but not limited to, claims for contribution or indemnification, against the United States in the event that the State of Connecticut brings any action against Kaman in connection with the Facility; and 4) any claims arising out of Response Actions at or in connection with the Facility, including any claim under the United States Constitution, any state constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, as amended, or at common law.

42. Except as set forth in Section XII and subject to the reservation of rights as set forth in Paragraph 44, Kaman, on behalf of itself and its subsidiaries, officers, directors, agents, employees, successors, insurers, and subcontractors, releases, waives, and abandons all past, present, and future claims against the United States in connection with the Work and the Navy Response Costs, including, but not limited to, claims for equitable adjustment, costs, expenses, attorney fees, compensatory damages, exemplary damages, and penalties, that arise under any past, present, or future contract between the United States and Kaman. Kaman warrants and represents that no other action or suit arising under any contract between the United States and Kaman in connection with the Work and the Navy Response Costs is pending or will be filed in or submitted to any other court, administrative agency, or legislative body. Kaman further warrants and represents that it has made no assignment or transfer of all or any part of its rights arising out of or relating to any contract between the United States and Kaman.

43. In the event that the United States brings a claim against Kaman in response to a Connecticut Work Claim, Kaman waives all claims and defenses against the United States with respect to such claim, including, but not limited to, claims or defenses arising out of or related to

contracts between the United States and Kaman in connection with the Facility, or contribution claims under CERCLA or any other federal or state law or common law. Nothing in this paragraph shall be construed to be a waiver of claims and defenses that Kaman may have against the State of Connecticut.

44. Kaman reserves, and this Consent Decree is without prejudice to, all rights against the United States with respect to:

a. claims based on a failure by the United States to meet a requirement of this Consent Decree;

b. claims arising from any action that EPA takes against Kaman in connection with Waste Material at or originating from the Facility, but only to the same extent and for the same matters, transactions, or occurrences as are raised in EPA's claim, and with the exception of any action for the reimbursement of costs incurred performing all or any portion of the Work or for any action seeking to compel Kaman to perform all or any portion of the Work; provided, however, that in the event EPA initiates any such action against Kaman to compel Kaman to perform any Response Action that does not constitute Work under this Consent Decree, or for the recovery of Response Costs or other claims that do not constitute Work, Kaman reserves all claims or defenses against the United States pursuant to Sections 107(a) and 113 of CERCLA, or under any other legal or equitable theory, including contract claims; and

c. except for any Connecticut Work Claim, claims in the event that any third party asserts any claim against Kaman in connection with Waste Material at or originating from the Facility at any time prior to the Closing Date.

45. Except for the waiver of claims against the United States in connection with the

Work and the Navy Response Costs (Paragraph 42), the waiver of claims and defenses in response to Connecticut Work Claims (Paragraph 43), and the waivers in Paragraph 51, Kaman reserves all claims or defenses in the event that the United States initiates an action against Kaman pursuant to its reservation of rights under Section XV of this Consent Decree; provided, however, that in the event that the United States initiates an action based on a failure by Kaman to meet a requirement of this Consent Decree, Kaman shall not be released from any requirement, covenant, or waiver under the Consent Decree.

46. Nothing in this Consent Decree shall be deemed to constitute preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

XVII. Effect of Settlement; Contribution Protection

47. Nothing in this Consent Decree shall be construed to create any rights in, or grant any cause of action to, any person not a Party to this Consent Decree. The preceding sentence shall not be construed to waive or nullify any rights that any person not a signatory to this Decree may have under applicable law. Each of the Parties expressly reserves any and all rights (including, but not limited to, any right to contribution), defenses, claims, demands, and causes of action which each Party may have with respect to any matter, transaction, or occurrence relating in any way to the Facility against any person not a Party hereto.

48. Subject to the reservations in Sections XV and XVI, the Parties agree, and by entering this Consent Decree the Court finds, that the United States and Kaman are entitled, as of the Effective Date, to protection from contribution actions or claims as provided by CERCLA Section 113(f)(2), 42 U.S.C. § 9613(f)(2), and other applicable federal and State law for matters

addressed in this Consent Decree. The matters addressed in this Decree include the Work and the Navy Response Costs.

49. Kaman agrees that with respect to any suit or claim for contribution brought by Kaman for matters related to this Consent Decree, it will notify the United States in writing no later than 60 days prior to the initiation of such suit or claim.

50. Each Party agrees that with respect to any suit or claim for contribution brought against it for matters related to this Consent Decree, it will notify in writing the other Party within 30 days of service of the complaint on it. In addition, each Party shall notify the other Party within 30 days of service or receipt of any Motion for Summary Judgment and within 30 days of receipt of any order from a court setting a case for trial.

51. In any subsequent administrative or judicial proceeding initiated by the United States for injunctive relief, performance of the Work, recovery of response costs, or other appropriate relief relating to the Facility or this Consent Decree, Kaman shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States in the subsequent proceeding were or should have been brought in the instant case; provided, however, that nothing in this Paragraph affects the enforceability of the covenants and reservations of rights set forth in Sections XV and XVI.

52. Except to the extent necessary to enforce the terms of this Consent Decree, this Consent Decree is not, and shall not be, offered by the United States or Kaman as an admission of fact or law by any Party. It is expressly understood and agreed by the United States and

Kaman that neither performance of their respective obligations under this Consent Decree nor entry into this Consent Decree shall be construed as an admission of liability on the part of the United States or Kaman and that any such alleged liability is expressly denied.

XVIII. Access to Information

53. In conjunction with any site visit to the Facility, pursuant to Section VII, or upon request of the Navy's Project Coordinator, pursuant to Section IX, Kaman shall provide to the Navy, upon request, reasonable access to all non-privileged documents and information within its possession or control or that of its contractors or agents relating to activities at the Facility or to the implementation of this Consent Decree.

XIX. Retention of Records

54. Until 10 years following the completion of the "active remediation" portion of the Work, as defined in Paragraph 12, Kaman shall preserve and retain all non-identical copies of records and documents (including records or documents in electronic form) now in its possession or control or which come into its possession or control that relate in any manner to its performance of the Work, including, but not limited to, all analytical data generated in conjunction with the performance of the Work, all Remedial Design documents, all Remedial Field Action documents, and all Quarterly Reports on Long Term Monitoring. In addition, Kaman shall preserve and retain all non-identical copies of the following documents, now in its possession or control or which come into its possession or control, that pertain to the Facility:

a. any documents required to be maintained under the Resource Conservation and Recovery Act or analogous State hazardous waste laws;

b. any administrative notice, administrative or judicial complaint, or notice from any party, alleging noncompliance with federal, state, or local environmental laws;

c. any judicial or administrative agreement or order, or pre-litigation settlement agreement with a private party, that settles administrative or judicial matters referenced in subparagraph 54(b) above;

d. any environmental permit allowing discharge of a pollutant to air, water, or soil;

e. any soil, surface water, or groundwater sampling data;

f. any environmental inspection report issued by a federal, state, or local agency concerning any environmental media;

g. any environmental baseline study, environmental assessment, environmental audit, or feasibility study that relates to the environmental condition of the Facility;

h. any document referring to, relating to, or concerning spills or other releases or threats of releases of hazardous chemicals to the environment at the Facility;

i. any document concerning potential impacts to natural resources; and

j. any document containing information 1) regarding spills or other releases or threats of releases of Waste Material to the environment at any property in the vicinity of the Facility, and/or 2) otherwise indicating the possible contribution of Waste Materials originating from such properties to Waste Materials at or emanating from the Facility.

55. The record retention requirements of this Section shall apply regardless of any corporate retention policy to the contrary. At the conclusion of the record retention period

pursuant to this Section, Kaman shall notify the United States at least 90 days prior to the destruction of any records or documents to which this Section applies and, upon request, provide the United States access to such records or documents.

XX. Notices and Submissions

56. Whenever, under the terms of this Consent Decree, written notice is required to be given or a report or other document is required to be sent by one Party to the other, it shall be directed to the individuals at the addresses specified below, unless notice of a change is given in writing. All notices and submissions shall be considered effective upon receipt, unless otherwise provided. Written notice as specified herein shall constitute complete satisfaction of any written notice requirement of this Consent Decree with respect to the United States, the Navy, and Kaman, respectively.

Whenever notice or other information is required to be given to the United States, it shall be submitted to the following:

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Washington, D.C. 20044-7611
Re: DJ # 90-11-2-08604

NAVFAC Midlant
Code OPNEEV4 (Attn: V. Jurka)
9742 Maryland Avenue
Norfolk, VA 23511

Navy OGC Litigation Office
Attn: Waina J. McFarlane
Affirmative CERCLA Program
720 Kennon Street, S.E.
Building 36, Room 233
Washington Navy Yard, D.C. 20374-5013

Whenever notice or other information is required to be given to the Navy, it shall be submitted to the following:

NAVFAC Midlant
Code OPNEEV4 (Attn: V. Jurka)
9742 Maryland Avenue
Norfolk, VA 23511

Navy OGC Litigation Office
Attn: Waina J. McFarlane
Affirmative CERCLA Program
720 Kennon Street, S.E.
Building 36, Room 233
Washington Navy Yard, D.C. 20374-5013

Whenever notice or other information is required to be given to Kaman, it shall be submitted to the following:

Glenn M. Messemer
Vice President and General Counsel
Kaman Aerospace Corporation
Blue Hills Ave
P. O. Box
Bloomfield, CT 06002-0001

Mark R. Sussman
Murtha Cullina LLP
185 Asylum Street
Hartford, CT 06103-3469

XXI. Effective Date

57. The Effective Date of this Consent Decree shall be the date upon which the Consent Decree is entered by the Court.

XXII. Retention of Jurisdiction

58. This Court retains jurisdiction over both the subject matter of this Consent Decree and the Parties for the duration of the performance of the terms and provisions of this Consent

Decree for the purpose of enabling either of the Parties to apply to the Court at any time for such further order, direction, and relief as may be necessary or appropriate for the construction or modification of this Consent Decree, or to effectuate or enforce compliance with its terms, or to resolve disputes in accordance with Section XIV, or for any further relief as the interest of justice may require.

59. If the United States brings an action to enforce this Consent Decree, Kaman shall reimburse the United States for all costs of such action, including, but not limited to, costs of attorney time.

XXIII. Appendices

60. The following appendices are attached to and incorporated into this Consent Decree:

"Appendix A" is a map of the Facility.

"Appendix B" is the initial Performance Guarantee pursuant to Section X.

"Appendix C" is the Offer to Purchase the Facility.

"Appendix D" is the Kaman Response Action Work Plan.

XXIV. Modification

61. No material modifications shall be made to this Consent Decree without written notification to and approval of the United States, Kaman, and the Court. Non-material modifications to the Consent Decree may be made by written agreement between the United States and Kaman.

62. Nothing in this Consent Decree shall be deemed to alter the Court's power to enforce, supervise, or approve modifications to this Decree.

XXV. Lodging and Opportunity for Public Comment

63. This Consent Decree shall be lodged with the Court for a period of not less than 30 days for public notice and comment. The United States reserves the right to withdraw or withhold its consent if the comments regarding the Consent Decree disclose facts or considerations which indicate that the Consent Decree is inappropriate, improper, or inadequate. Kaman consents to the entry of this Consent Decree without further notice.

64. If for any reason the Court should decline to approve this Consent Decree in the form presented, this agreement is voidable at the sole discretion of any Party and the terms of the agreement may not be used as evidence in any litigation between the Parties or by any person in any other proceeding.

XXVI. Signatories/Service

65. Each undersigned representative of Kaman and the Assistant Attorney General for the Environment and Natural Resources Division of the Department of Justice certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind such Party to this document.

66. Kaman hereby agrees not to oppose entry of this Consent Decree by this Court or to challenge any provision of this Consent Decree unless the United States has notified Kaman in writing that it no longer supports entry of the Consent Decree.

67. Kaman shall identify, on the attached signature page, the name, address, and telephone number of an agent who is authorized to accept service of process by mail on its behalf with respect to all matters arising under or relating to this Consent Decree. Kaman

hereby agrees to accept service in that manner and to waive the formal service requirements set forth in Rule 4 of the Federal Rules of Civil Procedure and any applicable local rules of this Court, including, but not limited to, service of a summons. The Parties agree that Kaman need not file an answer to the Complaint in this action unless or until the court expressly declines to enter this Consent Decree.

XXVII. Final Judgment

68. This Consent Decree and its appendices constitute the final, complete, and exclusive agreement and understanding among the Parties with respect to the settlement embodied in the Decree. The Parties acknowledge that there are no representations, agreements, or understandings relating to the settlement other than those expressly contained in this Consent Decree.

69. Upon approval and entry of this Consent Decree by the Court, this Consent Decree shall constitute a final judgment between the United States and Kaman. The Court finds that there is no just reason for delay and therefore enters this judgment as a final judgment under Rules 54 and 58 of the Federal Rules of Civil Procedure.

SO ORDERED THIS ___ DAY OF _____, 2008.

_____

United States District Judge

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Kaman Aerospace Corporation, relating to the Naval Weapons Industrial Reserve Plant Bloomfield.

FOR THE UNITED STATES OF AMERICA

RONALD J. TENPAS
Assistant Attorney General
Environment and Natural Resources Division

5/14/08
Date

SCOTT D. BAUER
Trial Attorney
Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Washington, D.C. 20044-7611

NORA DANNEHY
United States Attorney
District of Connecticut

WILLIAM M. BROWN
Assistant United States Attorney
United States Attorney's Office
915 Lafayette Blvd, Room 309
Bridgeport, CT 06604

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Kaman Aerospace Corporation, relating to the Naval Weapons Industrial Reserve Plant Bloomfield.

FOR THE UNITED STATES DEPARTMENT OF THE NAVY

1/4/2008
Date

DONALD SCHREGARDUS
Deputy Assistant Secretary of the Navy
(Environment)
1000 Navy Pentagon
Washington, DC 20350-1000

1/41 2008
Date

WAINA J. MCFARLANE
Senior Trial Attorney
U.S. Department of the Navy
Office of the General Counsel
Navy Litigation Office
720 Kennon Street, SE
Bldg. 36, Rm. 233
Washington, DC 20374-5013

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Kaman Aerospace Corporation, relating to the Naval Weapons Industrial Reserve Plant Bloomfield.

FOR KAMAN

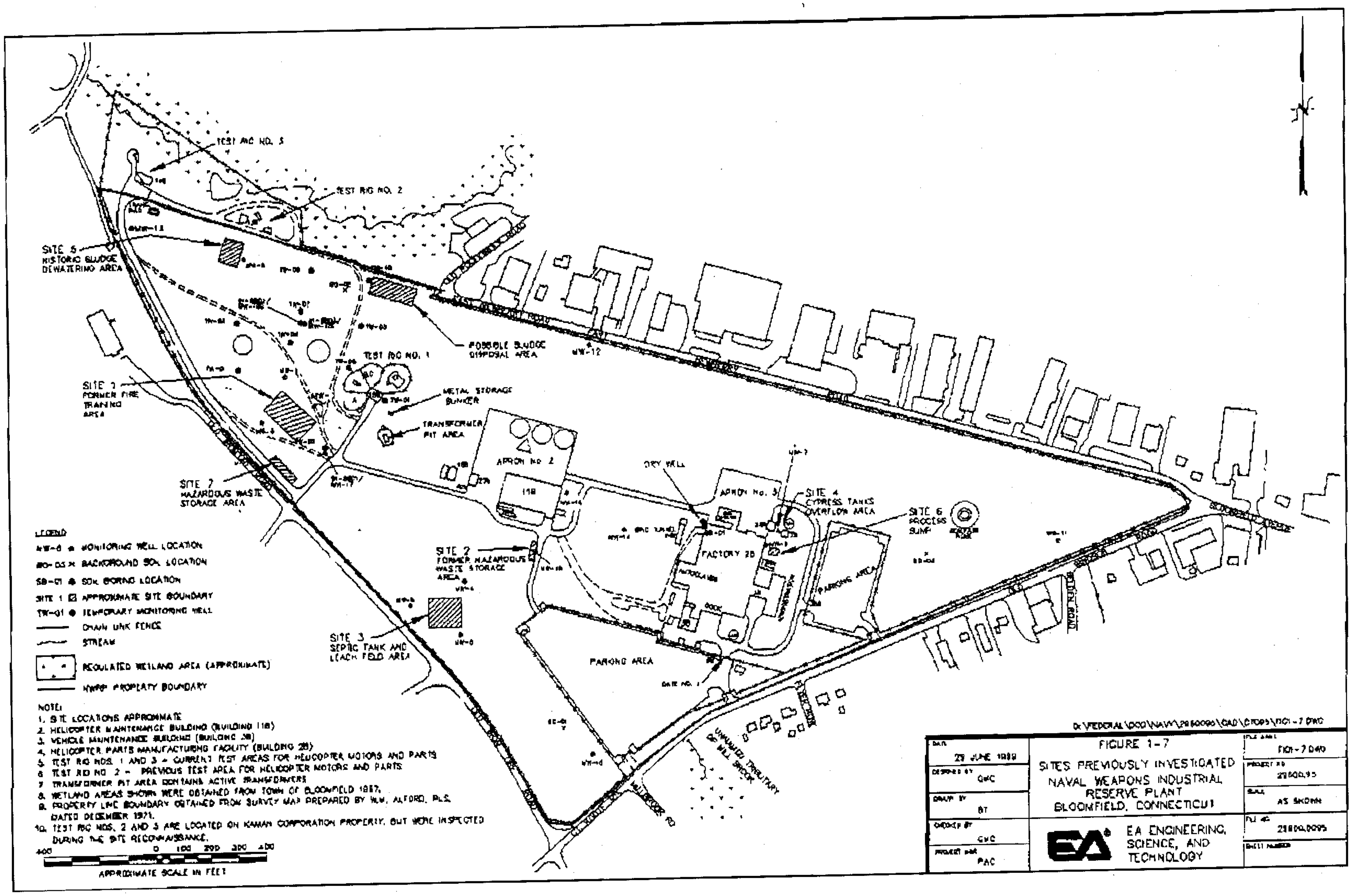
December 17, 2007
Date

ROBERT M. GARNEAU
Vice President and Treasurer
Kaman Aerospace Corporation
1332 Blue Hills Avenue
Bloomfield, CT 06002

Agent Authorized to Accept Service on Behalf of Above-signed Party:

MARK R. SUSSMAN
Murtha Cullina LLP
185 Asylum Street – CityPlace I
29th Floor
Hartford, CT 06103
860-240-6034

APPENDIX A


TEST RIG NO. 3
TEST RIG NO. 2
SITE 5
HISTORIC SLUDGE
DEWATERING AREA
POSSIBLE SLUDGE
DISPOSAL AREA
TEST RIG NO. 1
SITE 1
FORMER FIRE
TRAINING
AREA
METAL STORAGE
BUNKER
TRANSFORMER
PIT AREA
APRON No. 2
SITE 7
HAZARDOUS WASTE
STORAGE AREA
DRY WELL
APRON No. 3
SITE 4
CYPRESS TANKS
OVERFLOW AREA
SITE 6
PROCESS
SUMP
FACTORY 2B
PARKING AREA
SITE 2
FORMER HAZARDOUS
WASTE STORAGE
AREA
SITE 3
SEPTIC TANK AND
LEACH FIELD AREA
PARKING AREA
LEGEND
MW-6 ● MONITORING WELL LOCATION
BG-03 ✕ BACKGROUND SOIL LOCATION
SB-01 ● SOIL BORING LOCATION
SITE 1 ▨ APPROXIMATE SITE BOUNDARY
TW-01 ● TEMPORARY MONITORING WELL
CHAIN LINK FENCE
STREAM
REGULATED WETLAND AREA (APPROXIMATE)
NWIRP PROPERTY BOUNDARY
NOTE:
1. SITE LOCATIONS APPROXIMATE
2. HELICOPTER MAINTENANCE BUILDING (BUILDING 118)
3. VEHICLE MAINTENANCE BUILDING (BUILDING 38)
4. HELICOPTER PARTS MANUFACTURING FACILITY (BUILDING 2B)
5. TEST RIG NOS. 1 AND 3 - CURRENT TEST AREAS FOR HELICOPTER MOTORS AND PARTS
6. TEST RIG NO. 2 - PREVIOUS TEST AREA FOR HELICOPTER MOTORS AND PARTS
7. TRANSFORMER PIT AREA CONTAINS ACTIVE TRANSFORMERS
8. WETLAND AREAS SHOWN WERE OBTAINED FROM TOWN OF BLOOMFIELD 1987.
9. PROPERTY LINE BOUNDARY OBTAINED FROM SURVEY MAP PREPARED BY W.M. ALFORD, PLS. DATED DECEMBER 1971.
10. TEST RIG NOS. 2 AND 3 ARE LOCATED ON KAMAN CORPORATION PROPERTY, BUT WERE INSPECTED DURING THE SITE RECONNAISSANCE.
400 0 100 200 300 400
APPROXIMATE SCALE IN FEET
FIGURE 1-7
SITES PREVIOUSLY INVESTIGATED
NAVAL WEAPONS INDUSTRIAL
RESERVE PLANT
BLOOMFIELD, CONNECTICUT
29 JUNE 1989
GMC
BT
GMC
PAC
AS SHOWN
EA ENGINEERING, SCIENCE, AND TECHNOLOGY

APPENDIX B

Corporate Guarantee for Environmental Remediation

Guarantee made this December 17, 2007 by Kaman Aerospace Group, Inc., a business corporation organized under the laws of the State of Connecticut, herein referred to as guarantor. This guarantee is made on behalf of the Kaman Aerospace Corporation of Old Windsor Road, Bloomfield, Connecticut, which is our subsidiary, to the United States Navy (Navy).

Recitals

1. Guarantor meets or exceeds the financial test criteria and agrees to comply with the reporting requirements for guarantors as specified in 40 CFR 264.143(f), 264.145(f), 265.143(e), and 265.145(e), except that any references to the U.S. EPA in the Part 264 or Part 265 regulations shall be considered references to the Navy for purposes of this Corporate Guarantee.

2. Kaman Aerospace Corporation owns or operates the following hazardous waste management facility covered by this guarantee: the Bloomfield, Connecticut Naval Weapons Industrial Reserve Plant [EPA ID # CTD001155225] ("Bloomfield-NWIRP") Old Windsor Road, Bloomfield, Connecticut. This guarantee is for the investigation and remediation of Bloomfield-NWIRP as provided for in the Consent Decree in United States v. Kaman Aerospace Corporation, CV 08- (D.Conn.).

3. "Work," "Transfer Act" and other capitalized terms as used below refers to the definitions set forth in the Consent Decree in United States v. Kaman Aerospace Corporation, CV 08- (D.Conn.) ("Consent Decree").

4. For value received from Kaman Aerospace Corporation, guarantor guarantees to the Navy that in the event that Kaman Aerospace Corporation fails to perform the Work required by the Consent Decree in United States v. Kaman Aerospace Corporation whenever required to do so, the guarantor shall do so or establish a trust fund as specified in subpart H of 40 CFR part 264 or 265, as applicable, in the name of Kaman Aerospace Corporation in the amount of the current cost estimates for the work necessary to comply with the Transfer Act at that time ($6.2 million).

5. Guarantor agrees that if, at the end of any fiscal year before termination of this guarantee, the guarantor fails to meet the financial test criteria, guarantor shall send within 90 days, by certified mail, notice to the Navy at the following address:

NAVFAC Midlant
Code OPNEEV4 (Attn: V. Jurka)
9742 Maryland Avenue
Norfolk, VA 23511

Navy OGC Litigation Office
Attn: Waina J. McFarlane

Affirmative CERCLA Program
720 Kennon Street, S.E.
Building 36, Room 233
Washington Navy Yard, D.C. 20374-5013

and to Kaman Aerospace Corporation that it intends to provide alternate financial assurance as specified in subpart H of 40 CFR part 264 or 265, as applicable, in the name of Kaman Aerospace Corporation. Within 120 days after the end of such fiscal year, the guarantor shall establish such financial assurance unless Kaman Aerospace Corporation has done so.

6. The guarantor agrees to notify the Navy by certified mail, of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming guarantor as debtor, within 10 days after commencement of the proceeding.

7. Guarantor agrees that within 30 days after being notified by the Navy of a determination that guarantor no longer meets the financial test criteria or that he is disallowed from continuing as a guarantor of the Work, he shall establish alternate financial assurance as specified in subpart H of 40 CFR part 264 or 265, as applicable, in the name of Kaman Aerospace Corporation unless Kaman Aerospace Corporation has done so.

8. Guarantor agrees to remain bound under this guarantee notwithstanding any or all of the following: amendment or modification of the Work, the extension or reduction of the time of performance of the Work, or any other modification or alteration of an obligation of the owner or operator pursuant to the Consent Decree.

9. Guarantor agrees to remain bound under this guarantee for as long as Kaman Aerospace Corporation must comply with the applicable financial assurance requirements of the Consent Decree for the above-listed facilities, except as provided in paragraph 10 of this agreement.

10. Guarantor may terminate this guarantee by sending notice by certified mail to the Navy and to Kaman Aerospace Corporation, provided that this guarantee may not be terminated unless and until Kaman Aerospace Corporation obtains, and the Navy approves, alternate financial assurance coverage complying with the Consent Decree.

11. Guarantor agrees that if Kaman Aerospace Corporation fails to provide alternate financial assurance as specified in subpart H of 40 CFR part 264 or 265, as applicable, and obtain written approval of such assurance from the Navy within 90 days after a notice of cancellation by the guarantor is received by the Navy from guarantor, guarantor shall provide such alternate financial assurance in the name of Kaman Aerospace Corporation.

12. Guarantor expressly waives notice of acceptance of this guarantee by the Navy or by Kaman Aerospace Corporation. Guarantor also expressly waives notice of amendments or modifications of the Work.

I hereby certify that, except as necessary to conform this guarantee to the requirements of the Consent Decree, the wording of this guarantee is identical to the wording specified in 40 CFR 264.151(h) as such regulations were constituted on the date first above written.

Effective date: _____ [Closing Date as defined in the Consent Decree in United States v. Kaman Aerospace Corporation]

Kaman Aerospace Group, Inc.

/ Robert M. Garneau
Vice President and Treasurer

Signature of witness or notary: _____

APPENDIX C

OFFER TO PURCHASE

The undersigned, **Kaman Aerospace Corporation**, whose address is Old Windsor Road, Bloomfield, Connecticut, hereinafter called the Purchaser, hereby offers to purchase from the UNITED STATES OF AMERICA, acting by and through the General Services Administration, hereinafter called the Government, on the terms and subject to the conditions hereinafter set forth, certain real estate known as the Naval Weapons Industrial Reserve Plant, Bloomfield, Connecticut (referred to herein as "Land and Buildings") including and except as excluded in Exhibit A, together with all personal property of every kind and nature owned by the Government situated thereon or associated therewith, all as more particularly described in Exhibit A, Legal Description which exhibit is attached hereto and made a part hereof (collectively referred to herein as the "Property"). This Offer to Purchase replaces and supersedes all prior offers.

The Purchaser shall pay the Government for said Property the purchase price in the amount and manner as described on Exhibit B hereto. Any requirement for an earnest money deposit shall be waived. The balance of the purchase price, if any, is to be paid at closing. (All sums tendered or paid shall be by a certified or cashier's check payable to the "U.S. General Services Administration," unless other arrangements have been agreed to by the parties to this transaction).

TERMS AND CONDITIONS

1. DEFENSE PRODUCTION CAPABILITY. The Purchaser agrees to maintain a capability of performing its Government contracts and subcontracts for a minimum of five years from the date of the closing.

2. CONDITION OF PROPERTY. Subject to the Government's obligations set forth in Section 9 hereof, the Property is offered "as is" and "where is" without representation, warranty, or guarantee as to quality, quantity, character, condition, size, or kind, or that the same is in condition or fit to be used for the purpose for which it is intended and no claim for any allowance or deduction upon such grounds will be considered.

3. CONTINUING OFFER. This offer shall be deemed a firm and continuing offer from the date of receipt until accepted or rejected by the government. Provided, however, that after 180 days have elapsed from the date of receipt, the Purchaser not having received notice of rejection may consider its offer rejected, and if the Government desires to accept the offer after such 180 days, it shall not be so entitled unless the written consent of the Purchaser shall first be obtained or the parties mutually agree to extend the period for acceptance.

4. NOTICE OF ACCEPTANCE OR REJECTION. Notice by the Government of acceptance or rejection of the offer shall be deemed to have been sufficiently given when transmitted by facsimile or mailed to the Purchaser or its duly authorized representative

initial

initial

at the address indicated in the offer. Such acceptance will be conditional on the entry of the Consent Decree discussed in Paragraph 8, and will be void if the Consent Decree is not executed by the Parties, withdrawn following the public comment period, or not entered by the District Court for any reason.

5. CONVEYANCE OF TITLE. On the date of Closing, the Purchaser shall render final payment and the Government shall convey title to the Property to Purchaser by quitclaim deed or deed without warranty and bill of sale in conformity with local law and practice.

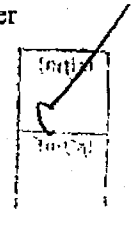
6. NATIONAL PRIORITIES LIST STATUS. The Property is not listed on the National Priorities List.

7. DISCLOSURE OF GROUNDWATER AND SOIL CONDITIONS. Samples of groundwater and soil at the Property show the groundwater and soil to contain contaminants. The Government and the Purchaser have independently contracted with environmental services companies to conduct remedial investigations and estimate remediation costs, and both parties are aware of the nature of the contamination.

8. PURCHASER TO ASSUME RESPONSIBILITY FOR ENVIRONMENTAL REMEDIATION.

a. The Purchaser will assume full responsibility for environmental characterization, remediation and monitoring necessary to satisfy the Connecticut Department of Environmental Protection (CTDEP) and achieve a "No Further Action" status for the property. The Purchaser will comply with the requirements of the Connecticut Transfer Act, Conn. Gen. Stat. Ch. 445 § 22a-134, (hereinafter "the Transfer Act") and will prepare, sign and file with the Connecticut Department of Environmental Protection (CTDEP) a Transfer Act Form III and Environmental Condition Assessment Form ("ECAF") as the "Certifying Party", as such term is defined under the Transfer Act. The United States Navy will sign the Form III solely in its capacity as Transferor of the Property, as such term is defined under the Transfer Act. Except as set forth in Section 9 or as required by the EPA or an appropriate regulatory agency, the Government shall have no responsibility whatsoever for any environmental remediation that may be required to use the Property, nor shall the Government have any liability for, or related to, any additional remediation that may be undertaken by the Purchaser.

b. CONSENT DECREE. The Purchaser and the Government will enter into a Consent Decree to be entered in the United States District Court for the District of Connecticut in form acceptable to counsel for the Purchaser and the Government, resolving the respective claims of the Purchaser and United States Navy against each other for response costs under the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §9601 et. seq. ("CERCLA"). Such Consent Decree will include the following material terms, subject to the specific conditions and reservations contained in the Consent Decree: (i) The Purchaser



shall agree to investigate and remediate the Property in compliance with the Transfer Act, as required by the CTDEP. (ii) The Purchaser shall provide adequate financial assurance for completion of the remediation required by the Transfer Act in accordance with one or more of the financial mechanisms described in 40 CFR 264.143 that are specified in the Consent Decree, and will initially consist of a written guarantee in the amount of $12.2 million from Kaman Aerospace Group, Inc. as described in 40 CFR 264.143(f)(10), provided that Kaman Aerospace Group meets the requirements of 40 C.F.R. 264.143(f)(1)–(8). Thereafter, as specified in the Consent Decree, any changes in the amount or type of the selected financial assurance mechanism shall be subject to approval by the U.S. Navy within 90 days of application by the Purchaser, and the amount of the financial assurance shall be based on the estimated cost of the work necessary to comply with the Transfer Act at that time. The Purchaser may terminate the financial assurance mechanism upon receipt of written notice from the U.S. Navy that the remediation has been fully and finally completed in accordance with the requirements of the Transfer Act. (iii) The Government and the Purchaser will provide mutual releases from all liability under CERCLA or analogous laws, including contract claims, in connection with contamination existing on or prior to the effective date of the Consent Decree that is on or emanating from the Property, except that the U.S. Environmental Protection Agency ("EPA") will reserve all powers and rights authorized by law and the Purchaser will reserve all rights, remedies and defenses under law or in equity with respect to any future action by the EPA. This reservation will have no effect on the mutual releases between the Navy and Kaman, as stated in Paragraph 10 and the Consent Decree. (iv) Except as otherwise provided in subclause (iii) above or elsewhere in this agreement, the Government and the Purchaser reserve all rights, remedies and defenses under law or in equity with respect to any claims brought by parties other than the Government or the Purchaser that may arise from or be related to the contamination emanating from the Property.

c. RECOVERABILITY OF ENVIRONMENTAL RESPONSE COSTS. The Purchaser will not recover as overhead or by any other means, in any present or future contract entered into with the Government, the first $7.8 million of disbursements Purchaser makes in connection with the environmental investigation and remediation of the Property. In the event the Purchaser attempts to seek reimbursement of any incurred costs over and above the $7.8 million, Purchaser must comply with all applicable statutes and regulations. The Government makes no determination at this time concerning the allowability of any costs over and above the $7.8 million. The determination on whether the Purchaser's costs are allowable will be made in accordance with applicable regulations at the time of the request.

9. GOVERNMENT TO HAVE OTHER RESPONSIBILITIES. The Government, acting by and through the U.S. Navy is responsible for the following:

Initial

Initial

a. completion of the scheduled removal of all contaminated soils within the fire training area on the Property as presently described to the Purchaser by the Government's environmental engineers in the Draft Workplan for Former Firefighter Training Area Soils Removal Action Dated May, 2005 by TN and Associates, Inc. and/or TN&A Engineering and Science. Navy Contract Number N62472-01-D-0807;

b. conducting of offsite groundwater investigations equivalent to the level of effort as described in the Interim Groundwater Sampling Work Plan dated December 1, 2005 by the Government's environmental consultants, E.A. Engineering, as previously authorized.

c. as necessary, connect to public water supplies up to 12 wells identified previously by letter dated October 11, 2005 from the Purchaser's environmental consultant, ERL, to the Navy, including the well located at 1312 Blue Hills Avenue, Bloomfield, Connecticut.

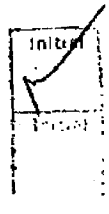
The Government will notify the Purchaser via letter upon completion of the items enumerated in 9(a) through (c).

10. NO WAIVER OF RIGHTS AGAINST THIRD PARTIES AND MUTUAL RELEASES. Nothing in this offer or in the contract formed by acceptance of this offer is to be construed as a waiver by either the Government or the Purchaser of any rights either party may have against other parties deemed responsible for the environmental condition of the Property. Each of the parties hereto irrevocably releases and waives all rights of recovery against the other party, for any claims whether now existing or arising in the future with respect to the environmental contamination existing on or prior to the effective date of the Consent Decree that is on or emanating from the Property, except for: (i) the obligations set forth in this Agreement and the Consent Decree; and (ii) third party claims brought against Purchaser or the Government for bodily injury, property damage or other cost recovery actions (including tort actions) that may arise in the future or be brought by any other party arising from environmental contamination existing on or prior to the effective date of the Consent Decree that is on or emanating from the Property.

11. NOTICE OF THE PRESENCE OF ASBESTOS. The Naval Weapons Industrial Reserve Plant at Bloomfield, CT may contain asbestos. The condition of the asbestos-containing materials is varied, but most such materials are believed to be undamaged, non-friable asbestos.

WARNING:

a. The Purchaser is warned that the Property contains asbestos. Asbestos is a hazardous material. Unprotected exposure to asbestos fibers has been determined



to significantly increase the risk of cancer, mesothelioma, and asbestosis. These diseases can cause serious bodily harm resulting in disability or death.

b. The Purchaser is invited, urged, and cautioned to inspect the Property as to its asbestos content and any hazardous or environmental condition relating thereto. GSA will assist the Purchaser in obtaining any authorization(s) that may be required in order to carry out any such inspection(s). The Purchaser shall be deemed to have relied solely on its own judgment in assessing the overall condition of all or any portion of the Property, including any asbestos hazards or concerns.

c. No warranties either express or implied, are given with regard to the condition of the Property including, without limitation, whether the Property does or does not contain asbestos or is or is not safe for a particular purpose. The failure of any Purchaser to inspect or to be fully informed as to the condition of all or any portion of the Property offered will not constitute grounds for any claim or demand for adjustment or withdrawal of a bid after its tender.

d. The description of the Property set forth in the Offer to Purchase and any other information provided with respect to said Property is based on the best information available to GSA and is believed to be correct, but any error or omission, including but not limited to the agency having custody over the Property and/or any other Federal agency, shall not constitute grounds of reason for nonperformance of the contract of sale or any claim by the Purchaser against the Government including, without limitation, any claim for allowance, refund, or deduction from the purchase price.

e. The Government assumes no liability for damages for personal injury, illness, disability, or death to the Purchaser, or to the Purchaser's successors, assigns, employees, invitees, or any other person subject to Purchaser's control or direction, or to any other person, including members of the general public, arising from or incident to the purchase, transportation, removal, handling, use, disposition, or other activity causing or leading to contact of any kind whatsoever with asbestos on the Property which is the subject of this sale, whether the Purchaser, its successors or assigns has or have properly warned or failed to properly warn the individuals injured.

12. NOTICE OF THE PRESENCE OF LEAD-BASED PAINT. Since property improvements were constructed prior to 1978, lead-based paint may be present. The purchaser is aware of this and will act accordingly in the removal, demolition and disposal of painted surfaces. The Government assumes no liability for damages, personal injury, illness, disability or death to any person as a result of the presence or removal of lead-based paint.

13. CONTRACT. This offer and the acceptance hereof shall constitute an agreement between the Purchaser and the Government ("Agreement"). With the exception of the Consent

Decree described in Paragraph 8, this Agreement shall constitute the entire contract between the parties. No oral statements or representations made by, or for, or on behalf of either party shall be a part of such contract. The sole restriction imposed by this Agreement upon Purchaser's right to freely transfer the Property or this Agreement is that, during the period between the Government's acceptance hereof pursuant to Paragraphs 3 and 4 herein, and the Closing, Purchaser shall not assign this Agreement without the prior written consent of the Government.

14. RESCISSION. An explanatory statement of the circumstances of the proposed sale may be submitted to the appropriate committees of the Congress because of its negotiated character. If submitted, the offer probably will not be accepted by the Government until after the proposed sale has been considered by such committees. However, in any event, the Government may rescind its acceptance at any time subsequent to acceptance and prior to conveyance, if it is reasonably determined by the Government that such action is justified in the light of circumstances then prevailing. In such event, all moneys paid by Purchaser hereunder shall he refunded, without interest, within thirty (30) days of the Government's rescission.

15. POSSESSION. The Purchaser is currently in possession of the Property pursuant to existing contracts with various agencies of the Government and may remain in possession subject to those Contracts.

16. RISK OF LOSS. Upon conveyance of title the Purchaser shall have all responsibility for care and handling and all risks of loss or damage to the Property and have all obligations and liabilities of ownership subject to paragraph 8 hereof.

17. TITLE EVIDENCE. Any title evidence, which may be desired by the Purchaser, will be procured by it at its sole cost and expense. The Government will, however, cooperate with the Purchaser or its authorized agent in this connection and will permit examination and inspection of any documents relating to the title of the Property involved as it may have available. It is understood that the Government will not be obligated to pay for any expense incurred in connection with title matters or survey of the Land and Buildings.

18. LIABILITY. If this Offer to Purchase is accepted and: (a) the Government fails for any reason to perform its obligations as set forth herein or (b) title to the property does not transfer and vest in the Purchaser for reasons outside the Purchaser's control, the Government shall, within 45 days of the notification of such failure, refund to the Purchaser all amounts paid by the Purchaser, without interest, whereupon this Offer to Purchase shall be null and void and of no further force or effect.

19. LIABILITY FOR TAXES. Upon conveyance of the Property the Purchaser shall assume responsibility for all general and special real and personal property taxes on the Property which become due and payable after the Closing. Taxes or sums due and payable in lieu of taxes, pursuant to statutory authority for all periods prior to Closing are the responsibility of the Government. All such taxes and sums in lieu of taxes due and

Initial

Initial

payable in the year the Closing takes place shall be prorated as of the Closing date between the Government and Purchaser. It is Purchaser's understanding that the Government does not owe any past due taxes or past due payments in lieu of taxes on the Property.

20. TAXES AND RECORDING. The Purchaser shall pay all taxes imposed on this transaction and shall obtain at its own expense and affix to all instruments of conveyance and security documents such revenue and documentary stamps as may be required by Federal and local law. All instruments of conveyance shall be placed on record in the manner prescribed by local recording statutes at the Purchaser's expense.

21. ASSIGNMENT OF LEGAL PAPERS. At the Closing, Government shall assign to Purchaser all contracts, permits and other legal papers, if any, necessary for the ongoing operation of the Property for the purposes required for the operation of the Property prior to the Closing. If any Connecticut Department of Environmental Protection permits must be transferred from the Government to the Purchaser, the parties shall register the proposed transfer of such permits with the Commissioner of Environmental Protection at least thirty (30) days prior to the Closing. The parties agree to cooperate further with each other as may be necessary to effect the transaction.

22. ANTITRUST LAWS. This Agreement may be forwarded to the Attorney General of the United States for his advice as to whether the sale would tend to create or maintain a situation inconsistent with the antitrust laws. Any such advice received from the Attorney General shall be effective only if (i) it is in writing and (ii) either a copy of such advice is delivered to Purchaser or a Government official certifies to Purchaser in writing in reasonable detail the substance of such advice. The acceptance of the offer by the Government may be rescinded by the Government prior to conveyance of the Property in the event unfavorable advice is received from the Attorney General. Such rescission shall be without liability on the part of the Government other than to return the down payment in accordance with the requirements of Paragraph 18, above.

23. OFFICIALS NOT TO BENEFIT. No member of or delegate to the Congress, or resident commissioner, shall be admitted to any share or part of the contract of sale or to any benefit that may arise there from, but this provision shall not be construed to extend to the contract of sale if made with a corporation for its general benefit.

24. COVENANT AGAINST CONTINGENT FEES. The Purchaser warrants that it has not employed or retained any person or agency to solicit or secure this contract upon any agreement or understanding for a commission, percentage brokerage, or contingent fee. Breach of this warranty shall give the Government the right to annul the contract without liability or in its discretion to recover from the Purchaser the amount of such commission, percentage, brokerage or contingent fee in addition to the consideration herein set forth. This warranty shall not apply to commissions payable by the Purchaser upon the contract secured or made through bona fide established commercial agencies maintained by the Purchaser for the purpose of doing business. "Bona fide commercial agencies" has been

Initial

construed to include licensed real estate brokers engaged in the business generally. Further, this warranty shall not apply to intracompany bonuses or similar remuneration paid by Purchaser to some or all of Purchasers' employees based on achievement of performance goals or objectives.

25. INFORMATION ABOUT USE. The Purchaser certifies that it will, upon written request by the Government, furnish reasonable information indicating the uses and purposes for which it is seeking to acquire the Property.

26. WARRANTY. The Government warrants that to the best of its knowledge, after diligent inquiry, it has not entered into any agreements or other binding arrangements which would be binding upon Purchaser except as expressly disclosed to Purchaser in writing at least thirty (30) days prior to Closing and agreed upon by Purchaser to be so binding in writing prior to Closing.

27. OTHER PROPERTY NOT AFFECTED. This Offer to Purchase and the terms thereof do not apply to property or transactions in property other than that described in Exhibit A herein attached.

28. TERMINATION. Subsequent to acceptance of this Offer to Purchase by the Government and prior to conveyance, this agreement is contingent upon entry of the Consent Decree provided for in Section 8(b) hereof. In the event that a Consent Decree mutually acceptable to the parties is not entered by the District Court for the District of Connecticut by December 31, 2006, this agreement shall terminate, unless such delays are the result of circumstances beyond the control of the Purchaser (e.g. delays caused by government agency reviews and approvals), or the parties agree in writing to extend the termination date.

29. CLOSING. Subject to any termination of an agreement resulting from this Offer to Purchase as permitted herein, the Closing shall take place at a location selected by the Purchaser, or another location as may be agreed to by the parties hereto, on a mutually agreeable date not later than December 31, 2006, unless otherwise agreed between the parties.

IN WITNESS WHEREOF, the Purchaser, Kaman Aerospace Corporation, has caused this offer to be executed and delivered to the United States of America through the General Services Administration this __th day of July 2006. Each of the undersigned representatives of the parties certifies that he or she is fully authorized to enter into the terms and conditions of this Agreement and to execute and legally bind such party.

(Signed) _____ (Date) July 31, 2006
Robert M. Garneau

(Company) Kaman Aerospace Corporation
(Title) Vice President and Treasurer

State of Connecticut)
) ss. Bloomfield, July 31, 2006
County of Hartford)

Personally appeared Robert M. Gameau, Vice President and Treasurer, of Kaman Aerospace Corporation, signer and sealer of the foregoing instrument and acknowledged the same to be his free act and deed as such Vice President and Treasurer and the free act and deed of that Corporation, before me.

Notary Public
My Commission Expires: 3/31/08

United States of America acting by and through the Administrator of General Services.

By: _____ (Date) _____
Name:

United States of America acting by and through the Department of the Navy, Naval Air Systems Command.

By: _____ (Date) _____
Name:

EXHIBIT A

FACILITY DESCRIPTION

NAVAL WEAPONS INDUSTRIAL RESERVE PLANT, DOD 463

The Naval Weapons Industrial Reserve Plant (NWIRP), is located off Old Windsor Road, Bloomfield, Connecticut and the facility consists of 154,586 square feet of building area on 84.62 acres of land, including and together with all personal property of every kind and nature owned by the Government which is situated thereon or associated therewith, except for the following Government property: NAVFAC fire truck used at NWIRP and any Government Property that is currently accountable to production, bailment, or storage contracts.

The facility is comprised of four major buildings totaling 146,318 square feet:

Building 1B	The Administration Building is two storied, heavy steel framed, and brick faced with 8,800 square feet on each floor, it is connected to Building 2 via corridors.
Building 2B	The Factory Building is two storied, heavy steel framed, and both composition and brick faced with a total floor, space area of 93,898 square feet.
Building 3B	The Boiler Room is single storied, heavy steel framed, and brick faced with 5,200 square feet of floor space.
Building 11B	The Flight Test Hangar Building is two storied, heavy steel framed, and composition sided, with a total floor space area of 29,620 square feet.

The facility has ten supporting structures totaling 8,268 square feet:

Building 4B	The Maintenance Storage Building is a single storied cinderblock, brick veneer with 224 square feet.
Building 7B	The Sprinkler Pump House is a single storied cinderblock, brick veneer with 500 square feet.
Building 8B, 9B, 10B	Three single storied Guard Houses, cinderblock, brick veneer with a total floor space of 465 square feet.

Building 12B	The Test Rig Building is reinforced concrete foundation, floor, exterior walls and roof with 2,395 square feet.
Building 28B & 39B	The two structures housing the Wastewater Treatment and Recirculation Facility are single storied, steel framed with concrete block walls and total 1,684 square feet.
Building 29B	The Materials Recycling Facility is single storied steel framed, composition sided with 3,000 square feet.
Building 44B	The Sand Storage Shelter is reinforced concrete foundation and slab, steel framed and composition sided on three sides.

The legal description of the property is as follows:

[Insert Legal Description]

EXHIBIT B

Purchase Price Background Facts:

- General Services Administration (GSA) fair market value (FMV) appraisal: $ 4,800,000

- Government's estimate of the costs the Government would incur if the Government were to perform the remedial work described in its estimate 12,200,000*

*The Purchaser has a different independent estimate of the costs of environmental remediation that the Purchaser will incur to perform the work required by the Transfer Act.

- Difference (negative value of Property): (7,400,000)

Purchase Price: $1.00 subject to the mutual covenants and additional consideration set forth in the Contract as follows:

- Purchaser to assume responsibility for environmental remediation:
  - Consent Decree required as described in Section 8(b)
  - restriction on chargeability to present and future contracts between the Purchaser and the Government for the first $7.8 million of disbursements made by Purchaser for such environmental remediation
- Government to assume responsibility for the matters set forth in Section 9 of the Contract
- Government and Purchaser agree to mutually waive all other rights of recovery against each other, except as provided in the agreement and Consent Decree

Fair Apportionment: The Government and Purchaser have agreed that their respective responsibilities as set forth in the Contract represents a fair and equitable apportionment of environmental liability related to the Property.

Kaman Aerospace Corporation
P.O. Box 2
Bloomfield, CT 06002
(860) 242-4461

KAMAN

December 20, 2006

Via email

Naval Air Systems Command
Attention: Robert McCall, Waina J. McFarlane
and Suzanne Krolikowski
RADM William A. Moffett Building
47123 Buse Road, Building 2272
Patuxent River, MD 20870-1547

William A. Costa
General Services Administration
Property Disposal Division 1PR
10 Causeway Street, Room 925
Boston, MA 02222

Dear Addressees:

RE: NWIRP Facility, Bloomfield, CT

Kaman Aerospace Corporation ("KAC") hereby amends its Offer to Purchase to revise the references to "December 31, 2006" appearing in paragraphs 28 and 29 to read "July 31, 2007", and to change the time period in paragraph 3 from "180 days" to "July 31, 2007". In all cases the parties retain the right to agree in writing to further extensions of these dates. We look forward to the government's confirmation that this extension of the Offer to Purchase is acceptable.

KAC is providing this amendment in reliance upon the government's agreement to extend the term of KAC's current lease for the NWIRP facility on the same terms and conditions through September 27, 2007 (a 180 day extension beyond the current March 31, 2007 lease expiration date). We hope this will allow us the reasonable opportunity to finalize a consent decree on terms and conditions reasonably acceptable to both parties.

Sincerely,

Robert M. Garneau
Vice President

cc. Scott Bauer, Esq.
Mark Sussman, Esq.
Don Frost, Jr., Esq.

GSA

GSA New England Region

December 27, 2006

Mr. Robert M. Garneau
Vice President
Kaman Aerospace Corporation
1332 Blue Hills Avenue
P.O. Box 2
Bloomfield CT 06002

Dear Mr. Garneau:

This is in reference to your letter of December 20, 2006 wherein you amend your Offer to Purchase dated July 31, 2006 to revise the references to "December 31, 2006" as they appear in paragraphs 28 and 29 of that Offer, to read "July 31, 2007". You also amend that Offer to change the period in paragraph 3 from "180 days" to "July 31, 2006". All other terms, conditions and covenants remain unchanged.

Further, it is our mutual understanding that the United States Navy intends to extend the current lease for the Bloomfield NWIRP facility for a period of one hundred eighty (180) days beyond its current expiration date.

Based on the above, the General Services Administration hereby advises of the acceptability of the above extension proposal which shall become effective on January 1, 2007.

Sincerely,

William A. Costa
Chief, Boston Operations Branch
Property Disposal Division

U.S. General Services Administration
Thomas P O'Neill Jr Federal Building
10 Causeway Street
Boston, MA 02222
www.gsa.gov

Kaman Aerospace Corporation
Old Windsor Road
P.O. Box 2
Bloomfield, CT 06002-0002
Phone: (860) 243-7087
Fax: (860) 243-7599

KAMAN

July 31, 2007

Via email

Naval Air Systems Command
Attention: Robert McCall, Waina J. McFarlane
and Frances Hoover
RADM William A. Moffett Building
47123 Buse Road, Building 2272
Patuxent River, MD 20870-1547

Mr. John Kelly
General Services Administration
Property Disposal Division 1PR
10 Causeway Street, Room 925
Boston, MA 02222

Dear Addressees:

RE: NWIRP Facility, Bloomfield, CT
Offer to Purchase dated July 31, 2006
Extension Letter dated December 20, 2007

Kaman Aerospace Corporation ("KAC") hereby further amends its Offer to Purchase to revise the references to "July 31, 2007" appearing in paragraphs 28 and 29 to read "December 31, 2007", and to change the time period in paragraph 3 from "July 31, 2007" to "December 31, 2007". In all cases the parties retain the right to agree in writing to further extensions of these dates.

KAC is providing this amendment in response to the government's email communication of this date confirming the government's agreement to this extension and the government's agreement to extend the term of KAC's current lease for the NWIRP facility on the same terms and conditions through December 31, 2007 (a 95 day extension beyond the current September 27, 2007 lease expiration date). We hope this will allow us the reasonable opportunity to finalize a consent decree on terms and conditions reasonably acceptable to both parties.

Sincerely,

Robert M. Gauvreau
Vice President

Concurrence on behalf of
General Services Administration

By: _____
John Kelly

cc. Scott Bauer, Esq.
Mark Sussman, Esq.
Don Frost, Jr., Esq.

Kaman Aerospace Corporation
Old Windsor Road
P.O. Box 2
Bloomfield, CT 06002-0002
Phone (860) 243-7087
Fax: (860) 243-7599

December 19, 2007

via email

Naval Air Systems Command
Attention: Suzanne Krolikowski,
Waina J. McFarlane and Sandy Frantz
RADM William A. Moffett Building
47123 Buse Road, Building 2272
Patuxent River, MD 20870-1547

Mr. David E. Kiernan
Mr. John Dugan
General Services Administration
Property Disposal Division 1PR
10 Causeway Street, Room 925
Boston, MA 02222

Dear Addressees:

RE: NWIRP Facility, Bloomfield, CT
Offer to Purchase dated July 31, 2006
Extension Letter dated December 20, 2006
Extension Letter dated July 31, 2007

Kaman Aerospace Corporation ("KAC") hereby further amends its Offer to Purchase to revise the references to "December 31, 2007" appearing in paragraphs 28 and 29 to read "September 30, 2008", and to change the time period in paragraph 3 from "December 31, 2007" to "September 30, 2008". In all cases the parties retain the right to agree in writing to further extensions of these dates.

KAC is providing this amendment in response to the government's communication of this date confirming the government's agreement to this extension and the government's agreement to extend the term of KAC's current lease for the NWIRP facility on the same terms and conditions through September 30, 2008 (a nine (9) month extension beyond the current December 31, 2007 lease expiration date). We hope this will allow us the reasonable opportunity to finalize a consent decree on terms and conditions reasonably acceptable to both parties.

Sincerely,

Robert M. Garneau
Vice President

Concurrence on behalf of
General Services Administration

By:
John Kelly

cc: Scott Bauer, Esq.
Mark Sussman, Esq.
Don Frost, Jr., Esq.

APPENDIX D

Conceptual Remedial Action Plan
Kaman Aerospace Corporation
Bloomfield, CT

Prepared For:
Kaman Aerospace Corporation
P.O. Box 1
Bloomfield, CT 06001

Prepared By:
GZA GeoEnvironmental, Inc.
120 Mountain Avenue
Bloomfield, CT 06002

GZA File No. 05.0878703.00

Issued: June 2007 (Draft)
Final November 2007

1.0 INTRODUCTION

Kaman Aerospace Corporation (Kaman) is in the process of purchasing the Naval Weapons Industrial Reserve Plant, DOD463 from the United States of America, Department of Defense, NAVAIR Command ("NWIRP Property or Site"). As part of the purchase and sale agreement Kaman will assume responsibility for the environmental cleanup of the site. In order to finalize this agreement, Kaman wishes to gain approval from the State of Connecticut Department of Environmental Protection (CTDEP) for it's Conceptual Remedial Action Plan (RAP) for the site. This conceptual RAP is being submitted with the anticipation of the transfer of the property. If for some reason the transfer is not completed, Kaman is not committed or responsible to implement the corrective actions contemplated by this conceptual RAP".

This document describes a conceptual RAP that addresses known areas of contamination at the site. Though extensive characterization studies have been conducted at the site over the past decade, there are some minor gaps in the delineation of the horizontal and vertical extent of groundwater contamination. Following CTDEP approval of this conceptual RAP, Kaman will provide the CTDEP with amendments for additional site characterization and detailed remedial design.

Kaman understands that this process has been used successfully at other large/complicated sites to advance remedial actions, promote economic development, and support business-related decision-making.

1.1 SITE DESCRIPTION AND OPERATIONAL HISTORY

The Site is located on Old Windsor Road, Bloomfield, Connecticut. The site location is shown on Figure 1-1. The geographic coordinates of the site are 41° 52' 00" N and 72 ° 41' 30" W.

The Site is a government-owned/contractor-operated facility, owned by the Department of Defense, Department of the Navy and occupied by Kaman Aerospace Corporation (Kaman), utilized and maintained pursuant to government directives under the terms of various facilities use agreements specific to the property. The property has been used for the design, test, and manufactures of helicopters and aerospace components, as well as for the assembly and tests of helicopters. Historically, substantially all of such work has been performed by Kaman at the direction of the US government pursuant to government contracts.

The Site is a triangular, relatively flat parcel with buildings, test areas, parking lots, roadways and flight aprons. The remaining areas of the site are maintained grassed areas. In total, the site encompasses 85 acres. The Site is bordered by East Newberry Road to the north, Old Iron Ore Road to the southwest, and Old Windsor Road to the east. The neighboring properties are either owned by Kaman or are used for light industrial or residential use (See Figure 1-2).

The Site is located on a topographic high at elevations ranging between 155 and 165 feet above mean sea level. The northern part of the site gently slopes down to the north towards Mill Brook which is located approximately 200 feet north of the site boundary. Surface water runoff from the northern and eastern sections of the Site enters the Mill Brook drainage system via overland and groundwater flow. Surface water runoff from the southern and southwestern sections flows toward Beamans Brook which is located to the southwest of the Site.

Construction of the facility began in 1951 on land that was previously used for tobacco and pig farming. The facility began operation in 1953 at the direction of the US government pursuant to a facilities use agreement and various other government contracts issued thereafter. The general Site layout has not changed since 1988.

The Site is comprised of three main buildings, a helicopter rotor test rig, a helicopter flight apron, and several other support and storage structures. Building 1B contains the plant's administrative offices. Building 2B is used for helicopter and aerospace component manufacturing, processing, and assembly. Building 11B is the third main building and is used, in part, as a hangar to house and repair helicopters.

Building 2B houses the processing, assembly, and manufacturing facility. The building also contains a quality control metallurgy laboratory, sheet metal shop, machine shop, metal finishing and anodizing/etching process room, paint spray room, heat treating autoclaves, and a general clean assembly room.

The main metal finishing process line in Building 2B consists of 12 immersion and spray tanks that are used for alkaline cleaning, etching, anodizing and water rinsing of the aluminum aerospace parts. Each tank holds approximately 1,200 gallons of solution. The primary chemicals utilized in the tank solutions include: sulfuric acid, chromic acid, sodium dichromate, and phosphoric acid. The rinsate water from the process bath line is released into the secondary containment area located beneath the floor in the main process room. The wastewater flows by gravity to a collection sump area and is then pumped to the on-site wastewater treatment plant located adjacent to Building 2B in Building 28B.

At the direction of the US government, from 1953 to 1989 the wastewater discharged from the above process line was batch-treated in two 5,000 gallon aboveground cypress tanks, which were installed and paid for by the US government under its then current facilities use contract. The cypress tanks discharged approximately 3,500 gallons of treated wastewater per day during normal operation to the unnamed tributary of Mill Brook. Over time it was discovered that the wooden stave construction of the cypress tanks may have allowed some seepage or overflow of the wastewaters to the ground and at Kaman's request, use of the cypress tanks was discontinued in 1989. They were then dismantled and removed in 1992 under a capital maintenance project pursuant to Kaman's then-current facilities use agreement with the Navy.

In January 1989, the current wastewater treatment system began operation. The wastewater treatment process includes lowering the pH through the introduction of sulfuric

acid, the precipitation of hexavalent chromium through the introduction of metabisulfate and a final addition of lime to restore the pH back to neutral.

The design of both the former cypress tanks and existing treatment systems directed the treated wastewaters to the unnamed tributary to Mill Brook. In response to a Consent Order between Kaman and the CTDEP, Kaman eliminated the discharge of treated process wastewater to this unnamed tributary of Mill Brook and by October 1991, rerouted the treated wastewater to the sanitary sewer system.

The upper level of Building 11B is used for office space. The lower level of the building contains a machine shop and hangar where the helicopters are repaired, modified, and tested for their overall performance. The north end of Building 11B is Apron No. 2 flight test area. There is also an air traffic control tower attached to the top of Building 11B.

The helicopter rotor test rig is referred to as Building 18B. Helicopter transmissions are tested for their overall performance under loaded conditions at the test rig. This area has existed since the late 1950's.

In the western part of the Site is an area known as the Former Fire Training Area (FFTA). This area was used from 1953 to 1987 to train firefighters. At the direction of the US government and pursuant to the specifications and mandates of various US government contracts. Flammable liquids were poured on the ground, confined to two circular areas by berms, and ignited (See Figure 1-2). The majority of the liquids used as part of the fire training were fuels, although other flammable liquids were also burned. Reportedly, spent solvents generated at the facility were either disposed of off-site or burned in the FFTA.

1.2 SITE INVESTIGATION COMPLETED TO DATE

The following is a list of major environmental investigations performed at this facility:

1. Preliminary Assessment Report, Naval Weapons Industrial Reserve Plan, prepared by the Naval Energy and Environmental Support Activity, February 1991.
2. Site Inspection Report for the Naval Weapons Industrial Reserve Plant prepared by Halliburton NUS Corporation, August 1994
3. Supplemental Site Investigation for Site 1, Site 2 and Site 6, Naval Weapons Industrial Reserve Plant, prepared by Tetra Tech – NOS Inc., October 1998
4. Supplement Investigation Report prepared by EA Engineering, Science, and Technology, August 2000
5. Residential Well Sampling Results prepared by EA Engineering, Science, and Technology, August 2001
6. Environmental Baseline Survey Report prepared by EA Engineering, Science, and Technology, September 2001

7. Basewide Feasibility Study prepared by EA Engineering, Science, and Technology, March 2003
8. Letter Report – Supplemental Sediment Sampling prepared by EA Engineering, Science, and Technology, January 2005
9. October 2004 Groundwater Sampling and Kaman/Kamatics Investigation prepared by EA Engineering, Science, and Technology, January 2005
10. Letter Report – Limited Subsurface Investigation, Flyer Row, Town of Bloomfield Right of Way, prepared by EA Engineering, Science, and Technology, January 2005.
11. Indoor Air Sampling Event – Building 19, 30 31, 32, 40, 41 Kamatics & Fidelco prepared by Environmental Risk Limited, March 2005.
12. Indoor Air Sampling Event – Building 2 prepared by Environmental Risk Limited, August 2005
13. Indoor Air Sampling Event – Building 11 prepared by Environmental Risk Limited, August 2005.
14. Supplemental Off-Site Well Survey prepared by Environmental Risk Limited, September 2005.

In addition the following investigations have been performed to better define the horizontal and vertical extent of groundwater contamination and to investigate potential sources in vicinity of the FFTA and Building 2B.

A. Waterloo Sampling of Offsite Properties, performed under subcontract to Environmental Risk Limited, December 2005. Seven borings were advanced on properties to the southwest and southeast of the site to further define the horizontal and vertical extent of groundwater contamination. A total of 44 discrete groundwater samples were collected using a Waterloo sampler and analyzed for volatile organic compounds, and where appropriate, for chromium.

B. Winter Onsite Characterization performed by ECC in December 2005 and January 2006. Eleven borings were advanced in off-site areas with a Geoprobe. A total of 22 discrete water samples were collected from these borings. Split groundwater samples were collected by ERL and analyzed for volatile organic compounds. In addition four off-site monitoring wells to the southwest of the site and five on–site monitoring wells were constructed and sampled.

C. Surface Water Sampling, Additional Well Installation and Sampling and Slug Testing by Environmental Risk Limited, in March and April 2006. Water samples were collected from Mill Brook to the north and east of the site, from the unnamed tributary of Mill Brook to the southeast of the site, and form Beamans Brook and analyzed for volatile organic compounds and chromium: two new monitoring wells were constructed on-site, and nineteen wells were slug tested to estimate aquifer properties.

D. Summer 2006 Onsite and Offsite Characterization Program by GZA GeoEnvironmental Inc. August – December 2006. The ongoing Summer/Fall 2006 (August through December) work being conducted by GZA GeoEnvironmental Inc. has included the following site activities: 1) completing 15 soil borings by GeoProbe and collecting/analyzing 40 soil samples along the perimeter of Building 2B for VOCs and chromium; 2) completing 7 borings, installing 11 monitoring wells and collecting/analyzing 12 groundwater samples from wells and 10 discrete groundwater samples just north and east of Building 2B for VOCs and chromium; 3) collected 23 groundwater samples from select wells on the NWIRP facility for water quality parameters; 4) measured water levels in 72 wells located in the lower saturated zone, completed 4 off-site soil borings, and collected/analyzed 13 discrete groundwater samples for VOCs and chromium.

Summary data tables for groundwater and surface water sample locations, and groundwater and soil sample analyses are included in Appendix A. Appendix B contains figures showing the sample locations and concentrations of various VOCs and chromium.

1.3 REMEDIAL ACTIONS COMPLETED TO DATE

In September 2005 TN & Associates performed a soil excavation project at the former Fire Fighting Training Area (FFTA). The excavation targeted both ETPH and PCE impacted soils. The target cleanup criteria were 500 mg/kg EPTH and 1 mg/kg PCE.

The final excavation pit for ETPH impacted soils measured 24 feet wide by 20 feet long and 15 feet deep. Based on field screening data, the excavation was deemed complete and post-excavation samples were collected.

The excavation for the PCE impacted soils measured 26 feet wide by 61 feet long with an initial depth of 10 feet, that somewhat overlapped the ETPH excavation. During the project and based on field screening data the extent of the excavation was increased both in area and depth Once field screening data indicated that the cleanup criteria had been met, the excavation was deemed complete and post excavation samples were collected.

All soils (approximately 900 cubic yards) were disposed of at Waste Management's Cottage Street Landfill, in Springfield, MA. Backfill and top soil were brought onsite and the excavation was filled. The impacted soils were tested for ETPH and VOCs.

Currently the CTDEP has requested that the Navy provide a conceptual site model that describes the excavation results in relationship to the initial understanding of the release (soil and groundwater) and how the confirmation samples collected verify that the remedial actions are compliant with the regulations. Since an alternative pollutant mobility criterion was chosen as the clean-up criteria, The CTDEP has requested from the Navy a demonstration that soil between the bottom of the excavation and the seasonal low water table do not have non-aqueous phase solvents and that the potable well within the aerial extent be taken out of service. Kaman has provided a conceptual model of the Former Fire

Training Area in Section 2.3.

In 1991-1992 a capital maintenance project funded by the Navy was initiated to remove a limited quantity of visually chrome stained soil in the area of the former cypress tanks. Verification data are not available and information on the quantity of soils removed is not available. This area was resampled in the summer/fall 2006 to determine if soil concentration met soil remediation criteria.

2.0 CONCEPTUAL SITE MODEL

2.1 ENVIRONMENTAL SETTING

The site is located in a primarily industrial area. It is situated on a topographic divide with maximum elevations approximately 155 to 165 ft above mean sea level. The topographical high cuts approximately east-west through the central portion of the site. North of the topographic divide the site slopes to the north and northeast toward Mill Brook. In the southern portion, the site slopes to the south and southeast towards either an unnamed tributary to Mill Brook (eastern portion) or towards Beamans Brook (western portion). Mill Brook drains to the Farmington River and Beamans Brook drains to the north branch of the Park River. Both brooks are classified by the State as Class B/A. The site is located outside of the 500-year floodplain and there are no streams or wetland areas on the site; however, there are regulated wetlands along Mill Brook and its tributaries to the north, east and south of the property. The closest open water bodies to the Site are a small body of water known as Barber Pond, approximately one acre in size, which is approximately 0.25 miles to the northeast and a small irrigation pond located between 1312 and 1322 Blue Hills Avenue to the south of the Site.

The overburden geology consists of an upper outwash deposit comprised of fine to coarse sands. This unit is underlain by a deltaic deposit consisting of alternating layers of fine sand, silty sand and thin (1/8 to 1 inch thick) silty-clay to clay lenses. This unit is underlain by a lacustrine deposit comprised of silty-clay and clay of varying thicknesses. The lacustrine deposit is underlain by a glacial till unit that overlies bedrock.

The Site is located in an area of groundwater recharge and the water table occurs at a nominal depth of approximately 20 feet below ground surface over much of the site. Strong downward hydraulic gradients occur below the water table in the deltaic deposits resulting in vertical flow through the upper deltaic deposits towards the lacustrine deposits. Groundwater flow in the lower deltaic deposits is primarily horizontal. The complexity of groundwater flow has resulted in distinct contaminant pathways. Horizontal groundwater flow has several distinct patterns dependent on vertical elevations. On the western portion of the property, the shallower groundwater flows primarily to the south southwest towards discharge areas along Beamans Brook and it tributaries and to the north towards discharge areas along Mill Brook. On the eastern part with a minor flow component to the north dependent on the local groundwater divide. On the eastern portion of the property, groundwater flows to the east and to the south towards discharge areas along Mill Brook and its tributaries.

2.2 AREAS OF CONCERN

The Conceptual Site Model (CSM) includes 42 soil Areas of Concern (AOCs) and 4 groundwater AOCs plus 13 AOC relating to existing/current tanks and oil/water separator (see Table 2-1). Soil AOCs include AOC-1 through AOC-25 plus AOC A-1 through AOC-A-16. Groundwater AOCs include G-1 through G-4. The table also indicates the nature of the release or potential release; whether the potential release has been investigated; whether a release has been detected; whether the release has been remediated, and whether future investigations are planned to meet property transfer requirements. Additional discussions related to future investigations are included in Section 6.1.

Figures 7-1 and 7-2 reproduced from the Environmental Baseline Survey Report prepared by EA Engineering, Science and Technology, September, 2001 shows the locations of the Navy's 42 soil AOC's. Figure 2-1 shows the groundwater AOCs. Figures 2-2 – 2-4 are cross sections of AOC's G-1, G-2 and G-3 for the predominant parameter for each plume.

2.3 Conceptual Model of Releases at the Former Fire Training Area

The former fire training area (FFTA) was used from 1953 to 1987 to train firefighters. Flammable liquids were poured on the ground, confined to a circular area by a berm, and burned. The majority of the liquid used as part of the fire training was petroleum based fuel, but other flammable liquids, including solvents, were also burned. It has been estimated that between 250 and 2,500 gallons of flammable liquids were burned in this area.

The water table in the FFTA is nominally 16 to 18 feet below ground surface. The subsurface materials consist of fine to medium sands to nominal depth of 20 feet below ground surface and these are underlain by a silty fine sand unit that is at least twenty feet thick. In the Navy's report the fine to medium sand is referred to as "Unit A" and the silty fine sand is referred to as "Unit B"

Some unburned fuel and solvent poured into the bermed area infiltrated into the subsurface and migrated to the water table. As the subsurface materials above the water table are fine to medium sands, migration to the water table was relatively rapid and retention of the non-aqueous phase mixture of fuel and solvent in the unsaturated zone was minimal. As a result, detections of fuel and solvents in the unsaturated zone are not common.

The fuels and solvents that migrated below the water table accumulated in the fine sand and silt unit. These fuels were an excellent substrate for biological activity along with reducing conditions, created favorable degradation to transform tetrachloroethene and trichloroethene to cis-1,2-dichloroethene in the groundwater. As a result, cis-1,2-dichloroethene is detected at much higher concentrations than tetrachloroethene or trichloroethene today.

Infiltration of precipitation in the twenty years since activities at the FFTA ceased, has flushed most residual contamination from the unsaturated zone and from the fine to

medium sands located below the water table. Due to the lower permeability of the underlying silty sand, cis-1,2-dichloroethene and associated organic compounds persist in this unit.

This conceptual model of the release, migration, and fate of contaminants at the FFTA is well supported by the results of the soil and groundwater investigations that have been conducted at and in the vicinity of the FFTA. The data that support this conceptual model are described below.

2.3.1 Supporting Data

Extensive soil sampling beneath the FFTA has confirmed that residual concentrations in soil of fuels and solvents are low. A large number of soil samples have been collected from the unsaturated zone at the FFTA. Only three samples contained volatile organic compounds at concentrations above Connecticut's Pollutant Mobility Criteria. A soil sample from S1-SB4 collected from a depth of 0 to 2 feet contained 14 mg/kg of tetrachloroethene and a soil sample from S1-SB3 collected from a depth of 0 to 2 feet contained 1.91 mg/kg of tetrachloroethene. These shallow soil samples contained relatively high concentration of organic matter from vegetation sources and the tetrachloroethene was likely strongly sorbed onto and into this organic matter. In addition, a soil sample from a depth of 6 to 8 feet at S1-SB4 was reported to contain 9 mg/kg tetrachloroethene.

Two soil samples collected at depths of 14 to 16 feet near S1-SB3 contained ETPH at concentrations above the Pollutant Mobility Criteria of 500 mg/kg; one sample was reported to contain 1,530 mg/kg and another was reported to contain 2,620 mg/kg. The petroleum hydrocarbons detected in these soils likely represent the residue of fuels that migrated to the water table within a smear zone created by a fluctuating water table. The distribution of residue petroleum hydrocarbons is sparse today because most of the petroleum hydrocarbons have been biodegraded as the result of the favorable conditions for biological activity in the fine to medium sands of the unsaturated zone and at the water table.

In addition to the soil sampling, a soil-vapor survey of the FFTA was conducted at 50 foot centers by Tetra Tech NUS in 1998. No volatile organic compounds were detected at concentrations in excess of Connecticut's industrial/commercial criteria for soil vapor though tetrachloroethene was detected in 5 of 15 sampling locations at concentrations in excess of the residential criteria for soil vapor. These results also indicated that residual contamination was not widespread in the unsaturated zone.

A total of 727 cubic yards of soil were excavated from the FFTA in 2005 to remove the soil in the vicinity of samples where tetrachloroethene and ETPH exceeded the Pollutant Mobility Criteria. The excavation criteria were an alternative Pollutant Mobility Criterion of 1.0 mg/Kg or (ten times the regular criterion GA PMC or equivalent to the GB PMC criterion) for tetrachloroethene and the Pollutant Mobility Criterion for ETPH. Soil was excavated to below the estimated seasonally high water table. Analytical results from

ten confirmation samples collected from the bottom and sidewalls of the excavation indicated that tetrachloroethene concentrations exceeded the Pollutant Mobility Criterion in only two samples; the maximum reported concentration was 0.18 mg/kg and the criterion is 0.1 mg/kg. ETPH did not exceed the Pollutant Mobility Criterion in any of the confirmation samples; the maximum concentration reported in seven confirmatory samples was only 120 mg/kg.

Groundwater samples collected from the fine to medium sand at the water table beneath the FFTA have relatively low concentrations of volatile organic compounds. For instance, PZ-03S which is screened from 15 to 25 feet below ground surface was reported to contain only 680 ug/L of cis-1,2-dichloroethene and 18 ug/L of methylene chloride; DP-4 in which a sample was collected from 19 to 21 feet below ground surface was reported to contain only 50 ug/L of cis-1,2-dichloroethene, 100 ug/l of tetrachloroethene, and 15 ug/L of trichloroethene. Groundwater samples that were taken from the silty fine sand unit, though, contain much higher concentration of cis-1,2-dichloroethene, tetrachloroethene, and trichloroethene. For example, at DP-04 a sample collected from a depth of 26 to 30 feet below ground surface was reported to contain 14,000 ug/L of cis-1,2-dichloroethene, 2,300 ug/L of tetrachloroethene, and 1,200 ug/L of trichloroethene. Similar concentration were reported at a depth of 36 to 40 feet at DP-04; whereas at a depth of 56-60 feet the reported concentration of cis-1,2-dichloroethene was only 2 ug/L.

2.3.2 NAPL Potential

No separate phase organic liquid (NAPL) has been observed in the subsurface in the vicinity of the FFTA. The high concentrations of cis-1,2-dichloroethene and tetrachloroethene have led some to conclude, though, that there is a potential that a NAPL may be present. There is an often cited rule-of-thumb that indicates a high potential for the presence of NAPL if concentrations of a compound exceed one-percent of solubility. Only tetrachloroethene was present at a concentration in excess of one percent of its solubility as the reported concentrations at DP-4 were about 1.25 % of solubility[1]. This rule-of-thumb was developed by researchers at the University of Waterloo and is based entirely on empirical data and experience has shown that the threshold is arbitrary and others have used 10% as the threshold for high potential for NAPL presence.

An important observation is that the compound found at the highest concentrations in groundwater beneath the FFTA is cis-1,2-dichloroethene; in fact at concentrations that are almost an order of magnitude higher than those of the other chlorinated organic compounds. This is important because cis-1,2-dichloroethene was not the solvent placed in the FFTA; it is a degradation product created by the breakdown of trichloroethene and tetrachloroethene. The presence of cis-1,2-dichloroethene at high concentrations relative to primary solvents indicates that degradation of primary solvents is nearly complete, otherwise the primary solvents would also be present in groundwater at relatively high concentrations.

[1] The solubility of cis-1,2-dichloroethene, trichloroethene and tetrachloroethene are approximately 3,500,000 ug/L, 1,100,000 ug/L, and 200,000 ug/L, respectively

In conclusion, the sampling data and excavation data clearly show that there is not a NAPL phase present in the unsaturated zone at the FFTA nor is there a NAPL phase present in the fine to medium sands at the water table. Very high concentrations of the biodegradation by product of the degradation of tetrachloroethene and trichloroethene, cis-1,2-dichloroethene, are present in groundwater at some location in the vicinity of the FFTA in the silty sand unit below the water table. These high concentrations indicate that geochemical conditions were suitable for the degradation of the primary solvents.

3.0 NATURE AND EXTENT CONTAMINATION

Contamination at the NWIRP property has been identified in both soil and groundwater. The source of the soil contamination appears to have been related to the burning of flammable liquids at the FFTA and spills/releases from both the cypress tanks and process line and sump at Building 2B. The groundwater contamination is also related to the releases at and in the vicinity of the FFTA and Building 2B. The following section provides a brief overview of the nature and extent of the contamination detected at the NWIRP facility.

3.1 SOIL

The soil data have indicated that releases occurred at both the FFTA and near the former cypress tanks though the residual soil concentrations indicate that continuing sources of groundwater contamination no longer exists in soil. In the FFTA, tetrachlorethene (PCE) and petroleum hydrocarbons were the only compounds detected above applicable remediation criteria and neither of these compounds are the dominant groundwater contaminants at the site. In the vicinity of Building 2B residual chromium has been measured in soils but leachable hexavalent chromium is insignificant and no VOCs have been detected in soils.

3.2 GROUNDWATER

The groundwater beneath the NWIRP facility has been impacted by activities in the vicinity of the FFTA and Building 2B. Volatile organic compounds detected at concentrations above the groundwater protection criteria include cis.1,2-dichloroethene, 1,1,-dichloroethene, chloroform, methylene chloride, trichloroethene, tetrachlorethene, 1,2-dichloroethane, and vinyl chloride. The primary non-volatile organic compound detected at concentrations above the groundwater protection criterion is chromium. Groundwater contamination is predominantly confined to the unconsolidated deltaic deposits. No groundwater contamination has been detected in the till unit beneath the lacustrine deposit.

The groundwater contamination plumes have been defined within this RAP as originating either in the western or eastern portion of the facility. The plume treatment will either rely on active or passive remediation dependent on the remedial goal of restoring the groundwater. However, the final remedial goal is to meet GA groundwater criteria. The treatment of a plume for active remediation is defined where a chemical constituent exceeds either the SWPC or the VC (Figure 2-1 defines the approximate limit where a

plume exceeds these applicable criteria. The only exception would be if a contaminant exceeds the volatilization criteria and the concentration exceedances were detected greater than 30 feet below grade). Passive remedial actions will target those plumes where the SWPC and VC are met but exceed that GWPC. A plume will be in compliant when post groundwater monitoring demonstrates compliance with the GWPC.

Three connected western groundwater plumes exist in the vicinity of the FFTA due to groundwater flow away from this topographically high area toward the north, south and east. The groundwater plume (G-1N) that extends to the north to Mill Brook contains primarily cis-1,2-dichloroethene. The long narrow plume (G-1S) that extends to the south-southwest towards Blue Hills Avenue and likely discharges to an un-named tributary of Beamans Brook, south of Blue Hills Avenue, contains primarily trichloroethene and tetrachloroethene. The plume (G-4) that extends to the east-northeast contains a mixture of organic solvents.

Two distinct eastern plumes appear to have originated in the vicinity of Building 2B; a plume extending to the east from the former cypress tank and perhaps Building 2B and a plume extending to the south of Building 2B. The eastern plume (G-2) contains chromium and some VOCs with chromium concentrations generally exceeding VOC concentrations. This plume extends east of Old Windsor Road, between Belden and Old Windsor. The southern plume (G-3) contains VOCs and chromium also; however in this case the VOC concentrations exceed the chromium concentrations. This plume extends along Flyer Row to an un-named tributary of Mill Brook. Surface-water quality data indicate that the plume is discharging to the un-named tributary.

3.2.1 Groundwater Hydraulics

The NWIRP facility is located atop a regional groundwater divide that roughly corresponds with the surface watersheds of the Mill Brook and North Branch Park River Regional Basins (Figure 3-1). This section discusses the groundwater flow regime in relationship to its discharge to Mill Brook, Beamans Brook and the unnamed tributaries.

Several lines of evidence have been evaluated based upon the data collected to support the conclusion that the contaminants discharge to these adjacent waterways. These include an initial numerical model based upon general site data, the assessment of both the geologic and hydrogeologic data, development of groundwater contour maps, evaluation of vertical hydraulic gradient and a general assessment of the plume migration.

3.2.1.1 Numerical Model

In conjunction with the initial site data review a numerical groundwater model was developed of the Naval Weapons Industrial Reserve Plant (NWIRP) site to evaluate the flow through the various depositional environments and assist in the development of an appropriate groundwater remedial action(s). This model was completed prior to the additional on and off-site characterization data which have been incorporated into the other section of 3.2.1. While the latest data has not been

fully incorporated into the modeling results, the model is representative of the current understanding of the site conditions and shows a good correlation between model calculated and measured water level.

The computer code, MODFLOW-2000, developed by the U.S. Geological Survey, was used to generate the groundwater model (Harbaugh and others, 2000). The computer code, PEST, was used to assist model calibration (Doherty, 2002).

The groundwater model encompasses a 2.3 square mile area (8,000 feet by 8,000 feet) centered about the NWIRP site. A finite-difference grid with 80 columns and 80 rows was used to represent the model area. Each grid cell has dimensions of 80 feet by 80 feet. The unconsolidated glacial deposits at the site were represented by 4 model layers. For simplicity, each model layer was assumed to be horizontal. The base of the four model layers were specified at elevations of 132 feet above MSL, 112 feet above MSL, 92 feet above MSL, and 22 feet above MSL, respectively. The upper three layers represent outwash deposits and deltaic deposits. The lower layer represents lacustrine deposits, glacial till, and the upper portion of the bedrock.

The recharge rate for the model area was specified as 13 inches per year. The streams within the model area, Mill Brook and its tributaries and Beamans Brook and its tributaries were specified as drain-type boundary conditions. The elevations of the drain-type boundary conditions were specified based on the topographic contours on the U.S. Geological Survey 1:24000 scale topographic map for the Harford North quadrangle.

The model parameters are horizontal and vertical hydraulic conductivity in each of the model layers. The initial estimates of model parameters were based on parameter values estimated from 18 slug tests conducted at the NWIRP and the adjacent Kaman site in 2006. The horizontal hydraulic conductivities estimated from the slug tests were generally in the range of 0.1 to 10 feet per day. The initial estimates of horizontal hydraulic conductivity were 5 feet per day in model layers 1, 2 and 3 and 1 foot per day in model layer 4. The vertical hydraulic conductivity was specified as 1/100th of the horizontal hydraulic conductivity.

Model calibration is the process of varying model parameters to improve the correspondence between measured water levels and flows and model calculated water levels and flows. For the model calibration average water levels recorded at 105 monitoring wells at the NWIRP and adjacent properties were used as calibration targets (refer to attached Table 3-1). As noted above the computer program PEST, the most-commonly used calibration program by the hydrogeologic community, was used to assist the calibration process. Particle tracking, using the computer program MODPATH (Pollack and others, 1994), was also used to aid model calibration. Particle tracking was used to track migration of contaminants from known source areas; the calibration targets for the particle tracking were the observed groundwater plumes. Based on model calibration the following parameter

values were determined:

Layer		Horizontal Hydraulic Conductivity (feet/day)	Vertical Hydraulic Conductivity (feet/day)
1	Vicinity of FFTA and far eastern portion or NWIRP	2	0.2
	Elsewhere	5	0.05
2	Center of model area	10	0.1
	Elsewhere	5	0.05
3		10	0.1
4		1	0.01

The model calculated water levels are listed along with the average measured water levels on the attached Table 3-1. The correspondence between model calculated and observed water levels is very good. The attached Figures 3-2, 3-3, 3-4 and 3-5 depict model calculated water table, water levels in layer 2 (intermediate zone) and model calculated water levels in layer 4 (deep zone). The model calculated residuals (difference between calculated and observed water levels) are posted on the figures. The attached Figure 4 depicts model calculated water levels in an east-west trending cross section through the center of the NWIRP.

This simple groundwater model correlates closely with the measured groundwater levels both at the NWIRP facility and to those measurements collected adjacent to the facility as part of the off-site investigations. The model is, in our opinion, a useful tool to assist in the design of pump and treat remediation systems for the site. As additional site data are collected during the remedial design process, the model can readily be updated to reflect this new information.

3.2.1.2 Groundwater Contours

Site wide groundwater contour maps were developed for the major hydrostratigraphic units at the site. The geologic data indicate the presence of upper and lower hydrostratigraphic units divided by a lacustrine deposit. The lacustrine deposits varies in elevation from 75 to 120 feet mean sea level (see Figure 3-6) and appear to be horizontally extensive based upon direct and indirect field measurements (i.e., boring logs, MIP logs, Waterloo Sampler logs) collected. At several locations, dropstones were recorded imbedded within the clay unit just below a massive inorganic fat clay layer and have been identified as an indicator marker bed.

The upper hydrostratigraphic unit is divided into two mappable units:

- The shallow water table groundwater is located predominantly within the outwash deposits that overlie the deltaic deposits and extend to grade. These deposits consist of fine to coarse sands. The depth to the water table ranges from approximately 15 to 20 feet below grade on the uplands and is relatively shallow (less than 5 feet below grade) in the lowlands near surface water features (wetlands and waterways).

  The upper shallow water table aquifer has been defined by those well screens that intersect the water table. Those wells screened across the water table were used to develop a shallow groundwater contour map (Figure 3-7). The groundwater contours depict radial flow from the recharge area in the central portion towards the wetland/streams in the low lying areas. The depicted shallow groundwater contours are generally consistent with the modeled groundwater contours indicating that the shallow groundwater discharges to the local wetland/streams.

- The intermediate aquifer is comprised of a deltaic deposit comprising greater geologic complexities than the overlying outwash deposits. This formation consists of a sandy geologic unit with varying thickness of silt, slit/clay and thin clay layers (less than ¼ of an inch). In some instances these silt, slit/clay and thin clay layers are somewhat extensive (can be inferred between borings) whereas at other locations they are not (appear to pinch out).

Strong downward vertical gradient exist in the upper hydrastratigraphic unit near the groundwater divide/recharge areas. However, near the wetlands and surficial waterways/discharge areas; the vertical hydraulic gradient is upward.. This implies groundwater recharges the upper hydrostatigraphic unit in the upland areas and groundwater flow in the valleys is from the deltaic deposits that discharge into the shallow outwash deposits and the local wetlands and streams. At one cluster location (PZ-1s,i,d); near Mill Brook (northwestern corner of the facility), artesian flow (groundwater flowing above the surficial elevation of the well casing) was recorded at the intermediate (PZ-1i) and deep (PZ-1d) screened intervals (within the deltaic hydrostratigraphic unit). In addition, vertical upward gradients were also recorded at several other monitoring well locations (Table 3-2). The location of these monitoring wells are generally located to the north near Mill Brook along Old Poquonock Road; east of Old Windsor Road near Mill Brook; near the unnamed tributary of Mill Brook east of Old Windsor Road and near the southern unmanned tributary of Beamans Brook adjacent to Blue Hills Avenue. In addition, historical off-site studies at the Birken MFG Company (on file with the CTDEP) near Beamans Brook also indicate a vertical upward gradient.

In general, downward vertical gradients are greatest near the outwash/deltaic boundary and decrease vertically towards the deltaic/lacustrine boundary. At one cluster location, (PZ-36D and PZ-36DD) the well screens were installed at or near

the lacustrine deposit. The vertical hydraulic gradient recorded between these two well screens (approximately 10 feet between well screens mid points) approaches zero. These data (vertical gradient becomes small at the deltaic/lacustrine boundary) were used to further develop the hydrogeologic conceptual model and to develop the potentiometric surface contours within intermediate deltaic formation. Only those well clusters that were screened within the deeper portion of the deltaic deposits with small calculated vertical gradients were considered to be representative of the groundwater flow within this unit. The intermediate/deltaic groundwater contour map is depicted on Figure 3-8.

These intermediate/deltaic groundwater contours (Figure 3-8) were compared to the previous predicted numerical model groundwater contours (Figure 3-2) to evaluate consistencies between data sets. These data depict similar radial flow patterns from the upland areas of the NWIRP facility.

The lower hydrostratigraphic unit is located below the lacustrine clay deposits. At the top of this unit, near the lacustrine deposit, there is a vertical upward gradient; however, deeper borings exhibit a vertical downward gradient. The groundwater measurements indicate that the potentiometric surface contour (Figure 3-9) does not exhibit radial flow from the central portion of the facility. Instead, there is an easterly flow component across the site. These field data are consistent with the numerical model Figure 3-3.

3.2.1.3. Plume Migration

Slug tests were completed by the Navy's and Kaman's contractors. The plumes are predominantly located within the deltaic sediments comprised of 40 to 60 percent fine sands 30 to 50 percent silt and 10 percent clay lenses. Since the slug tests were not evenly distributed throughout each soil type, a simple data averaging would skew the hydraulic conductivity values towards the soil type predominantly tested and would not be representative of the hydraulics throughout the plume. Thus, to better estimate the hydraulic conductivity within the plume, the data was analyzed based upon a weighted average of the percentage of sediment.

The analysis indicated that the hydraulic conductivity within the western plumes is 11 ft/day for the G-1N plume, 7 ft/d for the G-1S plume and 6 ft/day for the eastern G-2 and G-3 plumes. No slug tests were completed in the G-4 plume. The measured hydraulic gradients are 0.01 ft/ft for the G-1N plume, 0.006 ft/ft for the G-1S plume and 0.01 ft/ft for the eastern G-2 and G-3 plumes.

Assuming an average porosity of 0.25 the resultant groundwater velocities are as follows:

1. G-1N Plume = 0.43 ft/day or 157 ft/year (or approximately 8 years to reach Mill Brook; north of NWIRP from the FFTA).

2. G-1S Plume = 0.18 ft/day or 66 ft/year (or approximately 36 years to reach the unnamed tributary of Beamans Brook just south of Blue Hills Avenue from the FFTA)
3. G-2 and G-3 Plumes = 0.22 ft/day or 80 ft/year (or approximately 25 years to reach the unnamed tributary of Mill Brook just east of Flyer Row from Building 2B).

The rates of contaminant plume migration are consistent with the broad understanding of the aquifer hydraulics. Initially, near source areas (FFTA and Building 2B) the contaminants migrated vertically through the deltaic deposits. However, as the vertical gradient decrease with depth, the plumes migrate horizontally along the deltaic/lacustrine boundary until they discharge to the local wetlands/streams just beyond the facility due to the vertical upward gradients near these discharge locations. Flow nets were developed using actual hydraulic head and geochemical data from the G1-S/G1-N plume and the G-3 plumes to depict the two dimensional flow through the aquifer and the recharge and discharge areas (Figure 2-2 and 2-4). These figures depict that the contaminants migrate vertically upwards near wetlands/streams; based upon actual field data. These figures are consistent with the groundwater model (Figure 3-4). Thus, while the numerical modeling and actual groundwater elevations are consistent in predicting how contaminants should migrate through these formations, the actual geochemical data supports the findings that contaminants have migrated from the release areas and discharge to the local wetlands/streams.

The field data has identified that the plumes migrate through the deltaic deposits and that the lacustrine deposit impedes vertical flow. These findings are consistent with the numerical modeling, site geologic, hydrogeologic and geochemical data. In addition, these data are also consistent with published reports including the USGS Geologic Map (1963) which indicates that the adjacent streams (Mill Brook and Beamans Brook) have incised the deltaic deposits and terminate in the lacustrine deposits locates south and east of the facility (Figure 3-10). These various lines of evidence demonstrate that the plumes (G1-N/G1-S, G-2, G-3 and G-4) will migrate through these formations (predominantly the deltaic deposits) in a predictive manner and that the discharge of these plumes is to the local wetlands and streams located adjacent to the NWIRP facility (i.e., Mill Brook, unnamed tributary of Mill Brook, Beamans Brook and the unnamed tributary of Beamans Brook).

4.0 MIGRATION PATHWAYS, POTENTIAL RECEPTORS AND RISKS

The migration of contaminants in groundwater beneath the site and off-site towards discharge areas along Mill Brook and Beamans Brook is the primary pathway via which potential receptors could be exposed to site-related contaminants. Potential receptors of site-related contaminants are:

- Groundwater users through direct exposure to contaminated groundwater;

- Environmental receptors in the wetlands and surface-water bodies in the vicinity of the site where contaminated groundwater discharges, and.
- Office building occupants on-site and off-site from indoor air impacted by volatilization of volatile organic compounds from contaminated groundwater.

4.1 WATER WELLS

EA Engineering, Science, and Technology (EA) conducted a private water supply well survey in May 2001 by reviewing records at the Towns of Bloomfield and Windsor, Connecticut, and the Hartford Metropolitan District Commission. This study identified 83 properties within a 1.5-mi radius that potentially utilized well water.

A total of 16 of these 83 properties were selected for further investigation. The criteria for selection were based on those properties that were downgradient to one of the suspected source areas. A report was prepared by EA detailing requested information from property owners and the results from five wells sampled. The data obtained from these wells indicated that there were no reported detections of volatile organic compounds, extractable total petroleum hydrocarbons or hexavalent chromium at those wells sampled.

In September 2005 a Supplemental Off-Site Well Survey was prepared by Environmental Risk Limited (ERL) to update the EA private water supply well survey. An additional private drinking water well was identified at 1312 Blue Hills Avenue and an irrigation well was identified at 1322 Blue Hills Avenue. The well at 1312 Blue Hills has been sampled three times, and the well at 1322 Blue Hills once for VOCs and metals, with the results showing the water quality to be below Maximum Contaminant Levels for drinking water quality.

Under current conditions, there are no complete groundwater pathways identified with contamination. The Navy has connected the residence at 61 Old Windsor Road to public water and is committed to connecting the residence at 1312 Blue Hills Avenue to public water within the next year. No other private wells have been identified in areas that are potentially contaminated with site related compounds, however, if any wells become identified, the Navy has made a commitment to connect them to public water. In addition, the Navy has also agreed to abandon any existing water well within the study area to prevent future use, regardless if it is currently used to supply water to a property within the estimated plume boundary.

4.2 WETLANDS/SURFACE WATER BODIES

Wetlands are located to the north, east, south, and southeast of the site. Data collected at the Site to date indicate that groundwater has several distinct patterns. These wetlands are located in groundwater discharge areas, and some of the groundwater discharging to these wetlands originates as recharge at the site. A limited number of groundwater wells indicate that near wetlands, there is a vertical upward flow gradient indicating discharge occurs to wetlands. Trace levels of site-related contaminants in a tributary of Mill Brook and Beamans Brook also indicate that groundwater is discharging to the wetlands along the

brooks.

4.3 AIR

Volatilization of volatile organic compounds in groundwater is a potential exposure pathway for occupants of buildings overlying contaminated groundwater. Due, in part, to the downward hydraulic gradients that exists at the site, shallow groundwater at and immediately below the water table does not contain volatile organic compounds except in very limited areas near groundwater discharge areas. Groundwater contaminated with volatile organic compounds typically occurs tens of feet below the water table. The depth to groundwater has been recorded from approximately 10 to 30 feet across the NWIRP facility with an average depth to groundwater of greater than 20 feet below grade. As a result, there is very limited potential for exposure via the air pathway as there are no volatile organic compounds at the water table to volatilize since groundwater contaminants are more than 30 feet below grade. In addition, soil gas samples were collected beneath Building 30 which overlies the G-1S plume. These data indicated that the concentrations of VOCs were below the CTDEP soil vapor criteria.

5.0 REMEDIAL GOALS

Groundwater in the vicinity of the NWIRP Facility is classified as "GA" by the CTDEP. A "GA" designation is defined as "ground water within the area of existing private water supply wells or an area with the potential to provide water to public or private water supply wells. The Department presumes that ground water in such an area is, at a minimum, suitable for drinking or other domestic uses without treatment". This groundwater classification determines which Connecticut Remediation Standard Regulations (RSRs) Criteria are applicable for the remedial clean-up goals as defined in Sections 22a-113k-1 through 22a-133k-3 of the regulations.

Currently there is only one actively used water supply well within the known impacted groundwater area being used as a source of domestic water. This well has been tested three times in 2005 and 2006 and found to meet drinking water quality. The Navy and Kaman are committed to ensuring that all water supplies within the impacted area are connected to municipal water. In addition, with the availability of public water in the groundwater impacted areas there is little potential that groundwater will be used in the future as drinking water. This is further assured by the fact that the State of Connecticut and the Town of Bloomfield require that new residences and industries connect to public water supply when it is available.

5.1 GROUNDWATER

The remedial goals for groundwater at the Site are defined in the RSRs: 1) the surface-water quality criteria shall be met; 2) the volatilization criteria shall be met and 3) the groundwater protection criteria shall be met. These criteria are described below:

- Surface Water Protection Criteria (SWPC). These criteria address the potential for impacted groundwater quality to affect the quality of the adjacent receiving water bodies (i.e., Mill Brook and Beamans Brook along with their upgradient tributaries and associated wetlands. Compliance with the SWPC is achieved when: 1) the average concentration of the aerial extent of the plume is less than or equal to the applicable criteria, or 2) the concentration of a substance in the groundwater plume immediately upgradient of the receiving body is less than the applicable standard. Therefore, concentrations greater than the SWPC numerical criteria at an individual monitoring point does not necessarily mean an exceedance of the SWPC, unless that monitoring point is immediately adjacent to the surface water body.
- Volatilization Criteria (VC). These criteria address the potential for dissolved volatile organic compounds in groundwater to volatilize into the soil interstitial voids and impact indoor air quality in overlying structures (industrial/commercial or residential). Since there are residential structures downgradient of groundwater impact areas, compliance with the VC will be based upon the residential standards offsite and the industrial/commercial standards onsite.
- Ground Water Protection Criteria (GWPC). These criteria ensure that the groundwater quality will be adequately protected for future uses as a drinking water supply.

The SWPC, VC and GWPC for the primary site-related compounds are listed on Table 5-1. Table 5-1 identifies various remediation criteria. The "Active On-Site Criteria" is the more stringent of either I/C VC or the SWPC and is the criteria that will be used to demonstrate active on-site groundwater treatment compliance. The "Active Off-Site Criteria" is the more stringent of either the RES VC or the SWPC and is the criteria that will be used to demonstrate active off-site groundwater compliance. The "Passive Criteria" is the more stringent of either the GWPC or the SWPC; these criteria will be achieved with natural attenuation.

5.2 SOIL

The intent of the soil remedial program is to ensure that impacted soil will not pose a health risk from direct contact, inhalation and ingestion, and will not result in a continuing source of contamination to the groundwater. As defined in the RSRs soil concentrations must be evaluated with respect to the direct exposure criteria and the pollutant mobility criteria.

- Direct Exposure Criteria (DEC). Those soils impacted by a substance which can be in direct contact or be ingested will be evaluated by the direct exposure criteria (DEC). This will addresses the potential risk posed to a human should they come in contact with soil within 15 feet of the surface unless the soils are deemed "inaccessible". Any release to the subsurface would have occurred on the Facility. As such, the Industrial/Commercial Direct Exposure Criteria (I/C

DEC) will be the default numeric criteria for remedial actions.

- Pollutant Mobility Criteria (PMC). Those soils impacted by a substance that has the potential to leach and impact groundwater will be addressed by the PMC. The goal of soil remediation will be consistent with the Navy soil remediation at the FFTA which used a default criterion of ten times the GAPMC numeric criteria. This is consistent with applying the self implementing options of PMC as defined within the RSR given the site characteristics.

Those soils polluted with a volatile organic substance will be compared to the self implementing option identified within the RSRs for GA PMC (i.e., 10x's the GA GWPC). Site data has not detected the presence of a dense non-aqueous phase liquid, the water table is greater than 15 feet above the bedrock and the average vertical flow component is less than the horizontal flow component. In addition, there is public water within 200 feet, there are no wells located within 500 feet of the release area and the aquifer is not considered a potential public water supply resource due to low yielding hydrogeologic conditions.

Those soils polluted with an inorganic substance will be compared to the self implementing option identified within the RSRs for GA PMC based upon the results of SPLP analyses. In general, the total mass analysis will be compared to the GA PMC. If these results exceed the criteria, SPLP analyses will be performed. Those SPLP analyses will be compared to 10 x's the GA GWPC.

The DEC and PMC for the primary site-related compounds are listed on Table 5-2.

6.0 SUPPLEMENTAL SITE CHARACTERIZATION

The Navy had completed an assessment of the areas of concern (AOCs) at the NWIRP Facility. The location of these AOCs are shown on the EA Engineering Figure 7-1 and Figure 7-2 and summarized on Table 2-1. Some of the AOCs were fully investigated; however, many other AOCs will require additional investigations to provide the data and rationale to support a conclusion that no release has occurred or to define the extent of releases. In addition, investigations are being planned to further delineate the eastern hexavalent chromium G-2 plume. This section provides a brief overview of planned further characterization activities.

6.1 Area of Concern Investigations

At several of the AOCs previously investigated by the Navy additional data are required to support a conclusion that no release has occurred or to define the extent of contaminants in soil. The existing groundwater investigations (completed by the Navy and Kaman) are considered adequate except for additional characterization related to 1) the easterly hexavalent chromium G-2 plume and 2) if elevated soil concentrations exceeding the pollutant mobility criteria are identified that would warrant groundwater characterization.

The proposed AOC investigations will focus on the characterization of soil to the seasonal low water table or twenty foot depth, whichever is greater. These investigations will determine compliance with the direct exposure and pollutant mobility criterion. The AOCs to be investigated include Building 11B (AOCs 12 and 13); Building 18B (AOCs 16, 17, 18, 19, 20 and A-14); Building 7B (AOC 22); Building 12B (AOC A-11 and A-12); Buildings 1B and 2B (AOC-13 and 15; relating to sumps and floor drains); Former tanks (A-1, A-2, A-3, A-4, AOC-26 and AOC-27); Current tanks (AOCs 28, 29, 30, 31, 32, 33 and 34); and tentatively AOCs 2 and 7 pending a further review of the site data at these locations.

If during the AOC investigations, contaminants are identified that may potentially impact groundwater, further soil and groundwater sampling will be completed to define the vertical and horizontal extent of the release. If contaminants are identified that would require remedial actions they will be addressed as part of Section 7.0.

6.2 Groundwater Investigations

This RAP has identified that further plume delineation is required to define the G-2 plume; located east of Building 2B to determine the fate and migration pathway of the plume east of monitoring well MW-11DD. In addition, if hot spots are identified as part of the AOC investigations, further groundwater investigations may be required to delineate the source area. These data will be used as part of the remedial design to ensure that the remediation complies with the RSR regulations.

6.3 Sediment Sampling

The data suggest that the on-site plumes discharge to surface water bodies adjacent to the NWIRP as follows:

- G-1N likely discharges to Mill Brook;
- G-1S likely discharges either to a tributary of Beamans Brook or Beamans Brook;
- G-2 likely discharges to Mill Brook;
- G-3 discharges to a tributary of Mill Brook; and
- G-4 plume likely discharge to Mill Brook

Sediment samples will be collected within the section of the surface water body where the plume potentially discharges and samples will also be collected upstream and downstream of the discharge zone.

These data will be compared to sediment screening criteria (either the anticipated draft CTDEP or the EPA Ecotox Thresholds). If sediment concentrations exceed sediment screening criteria, then a risk assessment will be completed for that plume exceeding a criterion.

7.0 EVALUATION OF REMEDIAL TECHNOLOGIES

The remedial technologies that have been evaluated to achieve the remedial goals are presented in this section and the proposed remedial plan is presented in Section 7.0.

7.1 SOIL REMEDIAL TECHNOLOGIES

The presumptive remedy for soil is excavation and off-site disposal to meet the remedial goals. As discussed above, this technology was used to remediate contaminated soil within the FFTA (AOC-1) in September 2005 and was used to remediate stained soils in the vicinity of Building 2B in 1990 (AOC-4). If remedial actions are determined to be warranted to address soil impacts, an addendum to this conceptual RAP will be prepared prior to implementing a remedy.

7.2 GROUNDWATER TECHNOLOGIES

Six remediation technologies (or processes) for groundwater were evaluated for their ability to attain the groundwater remedial goals. The technologies that were evaluated were the following:

- Extraction with treatment at a central facility,
- Extraction with treatment in-well or at the well head,
- Enhanced Bioremediation,
- Chemical oxidation,
- In-situ chromium precipitation
- Natural attenuation
- Permeable reactive barriers

7.2.1. Extraction with Treatment at a Central Facility

This technology involves installing vertical extraction wells screened to target the groundwater plumes. Groundwater would be extracted from the aquifer and directed to a treatment facility for treatment. The treated water will be discharged to a sewer.

The extracted groundwater will undergo a treatment train process to remove VOCs and/or chromium as required. After extraction, the groundwater will be treated via air stripping that will partition the organic compounds from the liquid phase to a gaseous phase (if required, carbon polishing will be considered). Given the concentrations detected it is unlikely that the off-gas will require treatment, however, if treatment is required carbon absorption or off-gas bioremediation will be utilized to meet Connecticut's air emission requirements.

Once the VOC have been removed, the treatment of chromium will be the next process prior to discharge (this will only be required for the eastern plumes G-2 and G-3). Under this alternative the chromium contaminated water will be piped to Building 2B and blended into the existing process line for treatment. The discharge from the process line will be monitored as part of the process line state discharge permit. If applicable, the treated water could be re-used within the facility. This technology may require that the Site's state discharge permit (SPDES:SP0001286) be amended.

7.2.2 Extraction with Well Head Treatment

This technology involves installing vertical recirculation wells and well head treatment systems. This process is likely to be installed where the thickness of the sandy aquifer is greater than the zone of contaminated groundwater (in areas of vertically thin plumes). This way the contaminants can be targeted via an extraction from the lower portion of the contaminant zone then pumped through a treatment train system(s) prior to the treated water being recirculated back into the formation. This process can be designed to provide hydraulic containment of a plume or source removal without having to treat the water at a central location.

The treatment processes for well head treatment would be similar to that of a pump and treat system except that the extracted groundwater will be treated through a closed loop system back into the well; typically in-situ or within a shed constructed near the well. The extracted groundwater will be first treated via air stripping, partitioning the organic compounds from the liquid phase to a gaseous phase. To ensure compliance with the regulations, all treated water being recirculated back into the formation may require carbon polishing or ozone treatment after air stripping treatment and prior to it being recirculated into the formation. Once the groundwater has been treated it is redirected back into the well. A packer separates the lower extraction well screen from the upper injection well screen. The recirculated treated groundwater will create a positive head whereas the extracted groundwater creates a negative head. Thus, a three dimensional flow field is developed around the wells. This process allows both vertical and horizontal flow within the zone of influence increasing the number of pore volume exchanges (flushes) within the zone of influence enhancing mass removal. Given the concentrations detected it is unlikely that the off-gas will require treatment, however, if treatment is required carbon absorption or off-gas bioremediation will be utilized to meet Connecticut's air discharge requirements.

If the constituents within the plume include chromium, an ion exchange treatment system will be applied after the VOC treatment.

This technology is easily implementable, would provide additional pore volume exchanges over pump and treat and is cost effective. This technology is attractive because extracted groundwater is recharged to the aquifer after treatment rather than disposed of via the sewer system. The primary disadvantage of this technology is the reliance on the development of a three dimensional vertical flow field around the well, geologic conditions must be carefully assessed to ensure that proper circulation is obtained.

7.2.3 Enhanced Bioremediation

Bioremediation is the process by which living organisms act to transform or degrade containments. It involves the control and manipulation of microbial processes. For bioremediation to be effective, various microbiological, chemical, hydrogeological, geological and engineering elements must be coordinated to create and optimize subsurface conditions that will induce specific microbial growth and the degradation of contaminants at accelerated rates.

Bioremediation of volatile organic compounds in groundwater is limited at present due to generally aerobic conditions within the groundwater. Bioremediation could be enhanced by creating anerobic conditions within the aquifer through the use of hydrogen release compounds and increasing nutrient concentrations to stimulate the growth of anaerobic microbes. This technology is not feasibly due to the large aerial extent of the plumes and the high concentrations of VOCs in some areas.

7.2.4 Chemical Oxidation

In-situ chemical oxidation (ISCO) involves the introduction of chemical oxidants into the subsurface for the purpose of transforming organic ground-water contaminants into water, carbon dioxide, and chloride ions. Permanganate, hydrogen peroxide (also in combination with iron to produce Fenton's reaction), and ozone are the oxidants most commonly employed for PCE, TCE, and lesser chlorinated ethenes.

The primary advantage of ISCO technologies is their relatively rapid rate of contaminant destruction. Since the reaction is nearly immediate, treatment is far more rapid than biological techniques and can be faster than thermal or vapor recovery technologies. The persistence of the oxidant in the subsurface is important since this affects the contact time for advective and diffusive transport and ultimately the delivery of oxidant to targeted zones in the subsurface. Permanganate persists for longer periods of time (days) than peroxide or ozone (minutes to hours), and diffusion into low-permeability materials and greater transport distances through porous media are possible.

The main advantages of ISCO can be summarized as:

- rapid contaminant destruction with reduction in overall treatment time, allowing the site to reach closure sooner
- aqueous, sorbed, and non-aqueous phases of contaminants are addressed
- enhanced mass transfer (enhanced desorption and NAPL dissolution)
- elimination of capital intensive pump and treat systems
- ability to address contamination in situ without disturbing above ground structures
- cost competitive with other candidate technologies.

- Potential disadvantages or limitations may include:
- oxidant delivery problems due to reactive transport and aquifer heterogeneities.
- natural oxidant demand may be high in some soil/aquifers.
- short persistence of some oxidants due to fast reaction rates in the subsurface.
- health and safety issues regarding the handling of strong oxidants.
- potential contaminant mobilization.
- potential permeability reduction.
- limitations for application at heavily contaminated sites.
- contaminant mixtures may require treatment trains.
- may have less oxidant/hydraulic control relative to other remedial technologies.

The design of a chemical oxidation treatment alternative would have to ensure that there is sufficient contact time between the oxidant and the contaminant within the plume to degrade the compound. To enhance the contact time a design of recirculation within the formation will be considered.

This alternative is easily implementable, would quickly reduce contaminant concentrations and is cost effective in limited areas. The effectiveness of this technology is only as good as the amount of contact between the oxidant and the contaminant. Thus, additional applications may be required.

7.2.5 In-Situ Precipitation of Chromium

In situ reduction of dissolved hexavalent chromium (Cr(VI)) to trivalent chromium (Cr(III)) is a viable treatment technology for Cr(VI) impacted groundwater because Cr(III) is less toxic and, due to its low aqueous solubility, precipitates out of solution and is immobilized (Cook, 2000).

In situ microbial reduction of Cr(VI) to Cr(III) can be promoted by injecting a carbohydrate solution, such as dilute molasses solution. Carbohydrates, consisting mostly of sucrose, are readily degraded by heterotrophic microorganisms present in the aquifer, depleting dissolved oxygen present in the groundwater, and leading to development of reducing conditions. The mechanisms of Cr(VI) reduction under induced reducing conditions include (1) microbial reduction involving Cr(VI) as a terminal electron acceptor for the metabolism of carbohydrates by species such as *Bacillus subtilis*, (2) extra-cellular reactions with by-products of sulfate reduction such as H_2S, and (3) abiotic oxidation of organic compounds including soil organic matter such as humic and fulvic acids.

The primary end product of Cr(VI) reduction is chromic hydroxide, $Cr(OH)_3$, which readily precipitates out of solution under moderately acidic to alkaline conditions. This process provides both short term and long term effectiveness in meeting groundwater cleanup objectives, as research has shown that the $Cr(OH)_3$ precipitate is an insoluble,

stable precipitate, immobilized in the soil matrix of the aquifer (Fruchter 2002).

Dissolved Cr(VI) can be also converted to $Cr(OH)_3$ by injection of ferrous sulfate solution into a reactive zone at appropriate concentrations. Cr(VI) exists as chromate, CrO_4^{2-}, under neutral or alkaline conditions and dichromate, $Cr_2O_7^{2-}$, under acidic conditions. Both species readily react with ferrous (Fe(II)) iron to form insoluble Cr(III) and Fe(III) hydroxides under slightly acidic to alkaline conditions.

This technology is implementable; however, the concentrations of hexavalent chromium would still likely require active remediation to achieve the remedial goals.

7.2.6 Monitored Natural Attenuation

Monitored natural attenuation (MNA) is a passive groundwater remediation approach. Typical remediation under MNA requires active biodegradation or environmental factors, which under favorable conditions reduce the toxicity and eventually neutralize the contaminant plume. Natural degradation processes are occurring within the aquifer. However, MNA relies on a more intensive groundwater monitoring program to provide evidence of and calculated site specific degradation rates. In many remedial projects MNA is completed in conjunction with other active remedial processes. At this Site MNA will only be an effective technology where the SWPC and VC criteria are already met and only the GWPC is exceeded.

Given the conditions of this site, this alternative provides an implementable and effective strategy.

7.2.7 Permeable Reactive Walls

Iron permeable reactive barriers have been successfully utilized at a large number of sites with chlorinated solvents in groundwater and at a limited number of sites with dissolved chromium. The granular iron technology is an in-situ method of treating groundwater contaminated with volatile organic compounds (VOCs) and hexavalent chromium. A typical in-situ configuration consists of a granular iron PRB placed across the flow path of a plume, as the plume flows through the PRB under natural gradients, the VOCs are destroyed to non-toxic end products and chromium is precipitated. The degradation of VOCs occurs due to the corrosion of iron metal which yields ferrous iron and hydrogen, both of which are reducing agents relative to contaminants such as chlorinated solvents. Chromium concentrations are reduced as dissolved hexavalent chromium is converted to insoluble trivalent chromium as the groundwater passes through the reducing zone created by the corrosion of iron.

A permeable reactive barrier was considered for the western plume G-1S along Blue Hills Avenue and both of the eastern plumes at the site boundary. The reactive barriers would be built across the width and thickness of the plumes and would be nominally 6-inches thick. Due to the depth of the plumes at these locations, the permeable reactive barriers would be emplaced using in-situ emplacement technologies. This

technology has been successfully used at a number of site and is less disruptive than trenching installation methods. The reactive barriers would be designed to last for thirty years. This technology may be more costly then the other conventional technologies in this section. However, PRB will be retained for consideration pending the outcome of a cost comparative analysis to be included as part of the final design.

8.0 PROPOSED REMEDIAL PLAN

The remedial technologies described in Section 6 are combined to produce the proposed Remedial Action Plan. This plan is conceptual in nature and provided to obtain agreement about the remedial approach in the known areas of groundwater contamination. A final remedial design will be submitted to the CTDEP for review and comment as an addendum to this conceptual RAP prior to implementing any remedial action. The active groundwater remedial strategy will consist of on and off-site treatment (as discussed below). If organic compounds are detected at concentrations exceeding one percent of effective solubility they will be remediated to the maximum extent possible.

This proposed RAP combines active groundwater remediation technologies with passive technologies to achieve the remedial goals. Active remedial technologies are proposed to achieve the short-term remedial goals to attain applicable surface-water protection criteria and the volatilization criteria and a passive technology is proposed to achieve the long-term goal to attain the groundwater protection criteria. In addition, the proposed remedial technologies will also be used to reduce off-site migration via hydraulic control and contaminant reductions.

The active groundwater remedial technology will primarily be groundwater extraction and treatment; however, chemical oxidation and recirculation well technologies may be introduced to treat concentrations that exceed the applicable surface water protection criteria and volatilization criteria. A final design will be submitted as an addendum to this RAP detailing the selected active treatment design. The proposed treatment systems are readily available, implementable and cost effective.

For logistical reasons, the active remedial components are discussed in terms of on-site and off-site components. The passive remedial process for attaining the long-term remedial goals shall be natural attenuation with long-term monitoring. This process is commonly referred to as monitored natural attenuation (MNA) and this terminology is adopted for this report.

The proposed plan calls for the installation of remedial wells at the source areas, along the perimeter of the property and at selected off-site locations. This conceptual RAP assumes that the leading edges of the plumes are in steady state conditions and are discharging to surface water bodies. The conceptual site model assumes a steady state condition because:

- The FFTA source area has not been used since 1987. The groundwater data beneath this source area indicates that the contaminant present at the highest concentration is cis-1,2-dichloroethane (1,2-DCE); a breakdown product of

both TCE and PCE. The presence of 1,2-DEC detected at concentrations greater (almost at an order of magnitude) than the primary solvent (TCE & PCE) used at the FFTA would indicate a lack of a continuing source to either the G-1S or G-1N plumes. In addition, the data has identified that the greatest concentrations of TCE and PCE have migrated away from the FFTA (see Figure 2-2).

- The volatile organic compound source area associated with the G-3 plume was the degreaser and associated piping and flooring. In 1991, under a capital improvement program the old degreaser and piping were removed and replaced along with improvements to the processing lines. Groundwater data collected within plume G-3 indicates a lack of significant concentrations near Building 2B indicating that the plume has migrated from the source area (see Figure 2-4).

- Calculated groundwater velocities indicate that these plumes should have reached the downgradient surface water bodies. Surface water sampling data confirms this.

- Surface water sampling in Beamans Brook downgradient of the G-1S plume a TCE concentration of 3 ug/L was reported. This concentration is well below the 2340 ug/L SWPC and indicates that the plume is discharging into Beamans Brook. Upgradient data at OF-7 a TCE concentration of 1,200 ug/L was reported at Blue Hill Avenue. Thus, at this location, the plume is in compliance with the SWPC.

- Surface water sampling in the tributary to Mill Brook, downgradient of the G-3 plume, reports TCE concentrations in the Mill Brook tributary at 8 and 16 ug/L. These concentrations are well below the 2340 ug/L SWPC and indicate that the plume is discharging into a tributary of Mill Brook. Upgradient data at OF-9 a TCE concentration of 3,000 ug/L was reported, slightly exceeding the SWPC from a direct push grab sample.

The proposed remedial plan is to cut off these plumes either on or off site at a location where the concentration is at or below the SWPC. The residual contaminants beyond the remedial systems (less than the SWPC) will continue to naturally attenuate within the aquifer and discharge to the surface water bodies. Thus, by ensuring that the treatment systems will cut off that portion of the plumes greater than the SWPC, compliance with the SWPC will be achieved at the initiation of the off-site treatment systems.

The volatile organic compounds plumes are located at depths greater than 30 feet below grade except at the leading edge of the plumes where they discharge to the surface water bodies. Cross sections figures 2.2 and 2.4 depict the vertical locations where concentrations within the plumes likely exceed the volatilization criteria and figure 2-5 depicts the exceedance of the volatilization criterion on plan view. In general, the locations where the plume exceeds the volatilization criteria are located either on

undeveloped land (G-3 plume) or are located within the wetland zoning buffer zones (75 feet from unnamed tributaries to Mill or Beamans Brooks and 100 feet from both Beamans and Mill Brooks).

The limits of the G-3 plume identified on Figure 2-5 are approximate based upon the current site investigation data. Additional investigations west of OF-9 would be required to ensure that the plume width to the west is not greater than depicted. However, groundwater data collected west of the G-3 plume at OF-5 and upgradient data collected at LF-08 did not detect volatile organics. In addition, the limit of the volatile organic plume along Old Windsor Road appears to be defined between DPV-30 and LF-08. Given the groundwater flow direction south of Old Windsor Road and the general narrow nature of the G-3 plume trace concentrations it is likely that the some but limited changes to the overall width of the plume may occur once additional investigations are completed.

The active remedial components for the western and eastern plumes are described below. The long-term monitoring plan is described in Section 8.

8.1 WESTERN PLUMES

The western plumes have been characterized on-site and at abutting downgradient properties. These data have identified three distinct plumes exceeding the SWPC and the VC that emanate from the west-central portion of the NWIRP facility; generally near the FFTA.

Concentrations within the northern plume (G-1N plume) are significantly less than the southern plume (G-1S plume). The groundwater data has indicated that the northern plume has migrated north of the NWIRP facility in the vicinity of Old Poquonock Road and likely discharges to Mill Brook, just north of the intersection of Old Poquonock and East Newberry Roads.

The concentrations within the southern plume (G-1S plume) appear to represent the bulk of the contamination migrating from the FFTA. Groundwater data suggest that the highest concentrations occur in a long narrow plume to the south-southwest towards Blue Hills Avenue. It is likely that this plume discharges to the un-named tributary of Beamans Brook, south of Blue Hills Avenue.

The groundwater concentrations are found in the east-northeast plume (G-4 plume) within the lower portion of the aquifer at the deltaic-lacustrine interface. Groundwater data suggests that the concentrations are highest in the western portion and decrease to the east. The G-4 plume is generally located approximately 70 feet below grade and exists as a thin deep plume. Recent data suggests that SWPC were not exceeded in this plume along the north-central property line.

8.1.1 On-Site Treatment (Western Plumes)

The proposed remedy to comply with the SWPC and VC is groundwater extraction

and treatment and perhaps recirculation wells (to increase the number of pore volume flushes) targeting areas of increased mass (see Figure 8.1). The proposed treatment of the extracted VOC will rely on air stripping. The final effluent is likely to be reused, discharged to the sewer under the existing discharge permit or re-injected back into the aquifer per permit requirements.

Hydraulic data would suggest that the achievable pumping rate is on the order of 2 gpm. Additional pumping tests are proposed before final design to ensure that the short-term on-site remedial goals within the western plumes can be achieved.

In addition, chemical oxidation is being considered in areas of higher concentrations quickly reduce the mass of volatile organic compounds in groundwater. This alternative will be further evaluated based upon pump test data, further evaluation of the vertical and horizontal distribution of the contaminants and the ability to achieve meaningful distribution of chemical additives. The final design may use a combination of pump and treat and chemical oxidation.

8.1.2 Off-Site Treatment (Western Plumes)

Volatile organic compound concentrations within the off-site portion of the G-1N plume have volatile organic compounds that do not exceed SWPC and VC, except at one location immediately adjacent to Mill Brook. As a result, no off-site active remediation is proposed. The proposed on-site remediation should sufficiently reduce the off-site plume concentrations; however, off-site conditions will be further evaluated as part of the passive MNA remedial process.

The off-site portion of the plume that extends to the south of the FFTA (G-1S plume) has volatile organic compound concentrations above the short-term SWPC and VC remedial goals. Groundwater data collected along the southern perimeter of the Kaman property has identified that the plume where the concentrations exceed the SWPC and VC is fairly narrow and well defined. The width of the plume exceeding SWPC and VC along the Kaman southern property perimeter (south of Building 30) is approximately 350 to 400 feet wide.

The proposed remedial technology is groundwater extraction and treatment to reduce concentrations below the SWPC and VC within the G-1S plume. In addition chemical oxidation and recirculation wells will be further evaluated within the final design. The proposed treatment of the extracted VOCs will rely on air stripping. The final effluent is likely to be reused, discharged to the sewer under the existing discharge permit or re-injected back into the aquifer per permit requirements.

The design and number of off-site wells will be based upon pump test data to determine capture zones. The general concept is to provide hydraulic control to prevent further contaminant migration and to meet the short term objectives. This will be achieved through a series of wells installed along the southern property perimeter (south of Building 30) of the Kaman, along Blue Hills Avenue and through a series of axial treatment wells

within the central (axis) portion of the G-1S plume between the on-site treatment wells and along Kaman's southern perimeter.

No active remediation is proposed for the off-site portion of the G-4 plume as concentrations do not exceed the SWPC and VC. Instead, the passive MNA remedial process is selected to achieve the long term objective.

A final plan detailing the number and location of monitoring wells will be submitted for approval as an addendum to this conceptual RAP prior to shutting down the active remediation systems.

8.2 EASTERN PLUMES

The eastern plumes have been well characterized and are comprised of two distinct plumes that originate in the vicinity of Building 2B that exceeds the SWPC and VC. Specifically these plumes appear to have initiated at the former location of the cypress tanks just northeast of Building 2B (eastern plume) and from the process line/degreaser/sump (process line) area in the northeast corner of Building 2B (southern plume). Groundwater analytical data has defined that the eastern plume (G-2) is comprised predominantly of chromium and to a limited extent VOC, with the southern plume (G-3) comprised predominantly of VOCs with a limited extent of chromium. Both plumes are believed to discharge to tributaries of Mill Brook. The migration pathways for both plumes are largely governed by both the vertical and horizontal flow component.

The eastern plume (G-2) extends downgradient from the vicinity of the northeast corner of Building 2B and appears to have originated at the former cypress tank and to a limited extent from the process lines. This plume extends east of Old Windsor Road, between Belden and Old Windsor Roads.

The southern plume (G-3) extends downgradient from the southern portion of the process lines. This plume extends south from Building 2B beyond the intersection of Flyer Row and Old Windsor Road to an un-named tributary of Mill Brook. Analytical and hydraulic data indicate that plume G-3 discharges to the tributary of Mill Brook south of Flyer Row.

8.2.1 On-Site Treatment (Eastern Plumes)

The source areas related to the cypress tanks was removed when these tanks were decommissioned along with a subsequent soil removal program. The source area related to the process lines was eliminated in a 1991 capital maintenance project funded by the Navy to refurbish the line, and where the containment pit and sump were rebuilt and fit with a chemical resistant liner. Thus, there is no longer a continuous source of contaminants.

Recent soil investigations within the process line area and around the northeastern perimeter (including near the former cypress tanks) indicate a limited residual of chromium in the upper three feet of the soil profile. Additional characterization will be required to determine the exact extent and if soil removal actions are warranted to meet the

remediation goals. At this time no soil remedial actions are proposed.

The proposed remedy for the on-site portion of the eastern plumes is groundwater extraction and treatment. Therefore the goal is to comply with the groundwater short term objectives by removing mass and reducing concentrations below the SWPC and the VC. In addition, by reducing concentrations from the origin of the eastern plumes, the effectiveness of the off-site treatment will be enhanced. Hydraulic data would suggest that the achievable pumping rate might be in the order of 2 gpm. Additional pumping test are proposed before final design to ensure that the short-term on-site remedial goals within the western plumes can be achieved.

The on-site groundwater treatment will consist predominately of groundwater extraction, combined in part with other alternatives discussed in Section 6.0 as deemed necessary. The extracted groundwater will likely be treated for chromium at a central facility. This conceptual plan envisions that treatment systems (extraction wells) would be located in the vicinity of Building 2B/cypress tank; to the east along the NWIRP perimeter adjacent of Old Windsor Road generally between Belden and East Newberry Roads and to the south along the NWIRP perimeter across from the intersection of Flyer Row and Old Windsor Road. Pending results of pumping tests, current hydraulic data would suggest that the extraction wells would operate at a nominal rate of 2 gpm to achieve in the short-term remedial goals.

Because these plumes consist of both chromium and VOC constituents the treatment process will rely on both air stripping for the VOC and utilization of the existing wastewater treatment system to treat the chromium. The final effluent will be either reused or discharged to the sewer under the existing discharge permit. To demonstrate the potential zone of influence and number of extraction wells, pump tests will be completed prior to remedial design. In addition, since there will be minimal amount of hydraulic flux (recharge due to precipitation) into the remedial system there should be efficient mass removal.

8.2.2 Off-Site Plume Treatment (Eastern Plumes)

There is a potential that the off-site portion of the southeastern plume (G-3) may require additional treatment in order to comply with the short term SWPC and VC remedial goals, and to protect downgradient receptors. The data collected southeast of Old Windsor Road suggests the width of the plume to the south narrows to between 200 to 300 feet in width and comprised mostly of VOCs with some chromium and appears to be limited to the shallower portion of the aquifer. If necessary, a limited number of extraction wells (or other technologies) will be installed on private property between the site and the un-named tributary of Mill Brook, either at the end of Flyer Row or on a private property just southeast of Flyer Row, provided access to this area can be reasonably obtained. Treatment of the groundwater removed would be achieved near the well heads, given the distance between this area and the Building 2B wastewater treatment system. Thus, the contaminants will be treated by air stripping and ion exchange. The final remedy will be designed after the completion of pumping tests.

Active remediation is not proposed for the off-site portion of the eastern plume (G-2). The plume will be contained at the site boundary and natural attenuation processes will gradually attain the remedial goals in the off-site portion of the plume.

9.0 GROUNDWATER MONITORING PROGRAMS

The proposed RAP has defined remedial approaches to address the higher concentrations of groundwater contaminants detected along the perimeters of the property and at several off-site locations to comply with the CTDEP remedial goals. A groundwater monitoring program will be employed to evaluate the performance of the remediation programs, and assumes that initial start-up data has been collected and that the systems are being operated. The collection of start-up data will be specified as part of the detailed system design and will be dependent on the type of remedial system selected.

The number and location of the proposed monitoring well network will be specified as part of an addendum to this RAP and that will be submitted for approval prior to implementation. The groundwater monitoring program will be flexible and may require revision based upon concentration reductions within the plume that may change the nature and extent of the plume(s). Therefore the following sections provide only overview on the types of proposed monitoring programs.

9.1 REMEDIAL SYSTEM EFFECTIVENESS

To evaluate the performance at each of the active remediation systems (after start-up) groundwater samples will be collected at both the influent and effluent side on a monthly basis at each treatment well. The influent groundwater sample will be used to determine:

- Concentration reductions within the plume(s) over time; these data will be used to determine when the short term objectives (SWPC and VC) are achieved. These data will also be used to evaluate concentration trends in the extracted groundwater
- These data will also be used to determine the amount of mass removed over the duration of the active system. The monthly groundwater sampling data will be compared to the previous monthly data. In addition, all data will be compared to comprehensive baseline groundwater quality data collected prior to remediation start-up.

The effluent sample will be used to determine compliance with applicable sewer and groundwater discharges permit requirements. These data will be used to determine if adjustments to the treatment system are required.

9.2 PLUME MONITORING

To evaluate the effectiveness of the treatment systems in reducing contaminant concentrations within the plumes, a select number of monitoring wells will be sampled as

follows:

- A limited number of monitoring wells will be sampled quarterly within the portion of the plume that exceeds the SWPC and VC. These wells will be located in the active remedial portion of the plume. The goal is to monitor changes in concentration, once the remedial system(s) are operational.
- A limited number of monitoring wells will be monitored quarterly for the first two years. Based upon the groundwater quality data, Kaman will request a reduction in frequency from quarterly to annually from the CTDEP after the initial two years of quarterly monitoring. The proposed monitoring program will evaluate the groundwater quality within the plume beyond the active remedial where concentrations are greater than the GWPC but less than the SWPC and VC. The goal is to evaluate the dynamic changes within the plume as mass/concentration decrease with time. These data will be used to design the long term monitoring program once the short term objectives are met.
- A limited number of monitoring wells will be monitored semi-annually downgradient of a documented primary or secondary release (i.e., FFTA, Building 2B, leaching field, sludge trench, dry wells, etc) to demonstrate compliance with the GWPC.

9.3 LONG TERM MONITORING

Once the active remediation has achieved the short term goals for a minimum of four consecutive quarters at individual remedial locations, the individual systems will be shut down. However, because compliance with the GWPC will not have been achieved at that time, a long term monitoring program will be established to evaluate the natural attenuation processes within the aquifer to further reduce the concentration within the plumes to achieve GWPC.

The number and location of the long term monitoring wells will be selected prior to shut down of a remedial system and submitted to CTDEP as a amendment to this RAP for approval. Since the remediation program is designed to reduce both contaminant concentrations and size of the plume(s), the selection of well locations for long term monitoring will be deferred until sufficient data are collected from the plume monitoring program.

The long term monitoring program will be discontinued once post groundwater monitoring requirements within the RSRs are achieved. GZA envisions that as the concentrations within the plume are reduced, the decommissioning of monitoring wells will occur typically from the toe of the plume, towards the source areas.

FIGURES

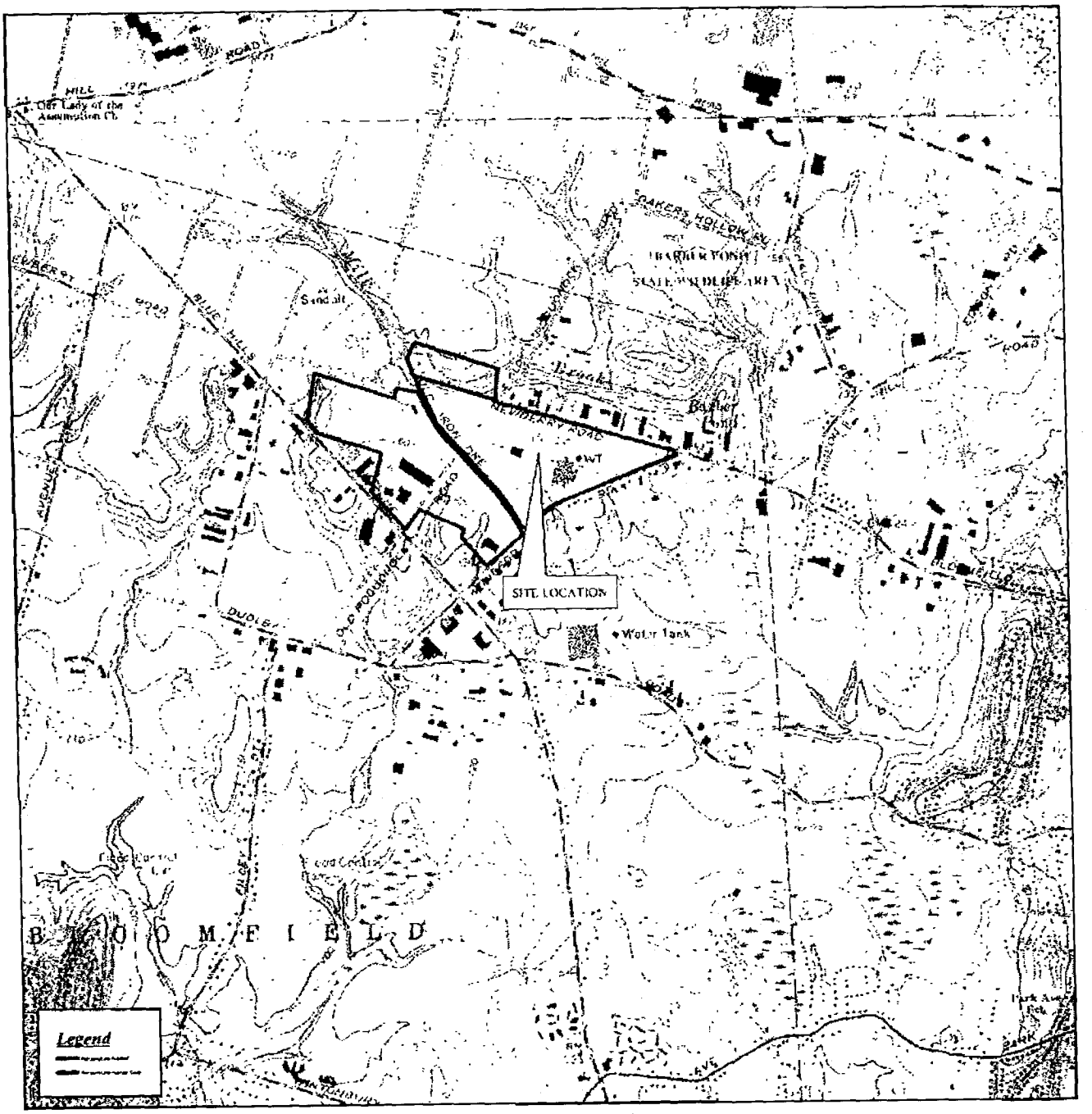


FIGURE 1-1 SITE LOCATION MAP	
KAMAN CORPORATION BLOOMFIELD, CONNECTICUT	
Compiled By: RJD	Date: 12-13-06
Reviewed By: GTB	Drawn By: MRH
Job Number: 08787-11	Filename:TOPO.MXD

0 800 1,600 3,200 4,800 6,400 8,000 Feet

GZA GeoEnvironmental Inc.

USGS 7.5 MINUTE
QUADRANGLE BASE MAP
HARTFORD NORTH, CONNECTICUT
1984

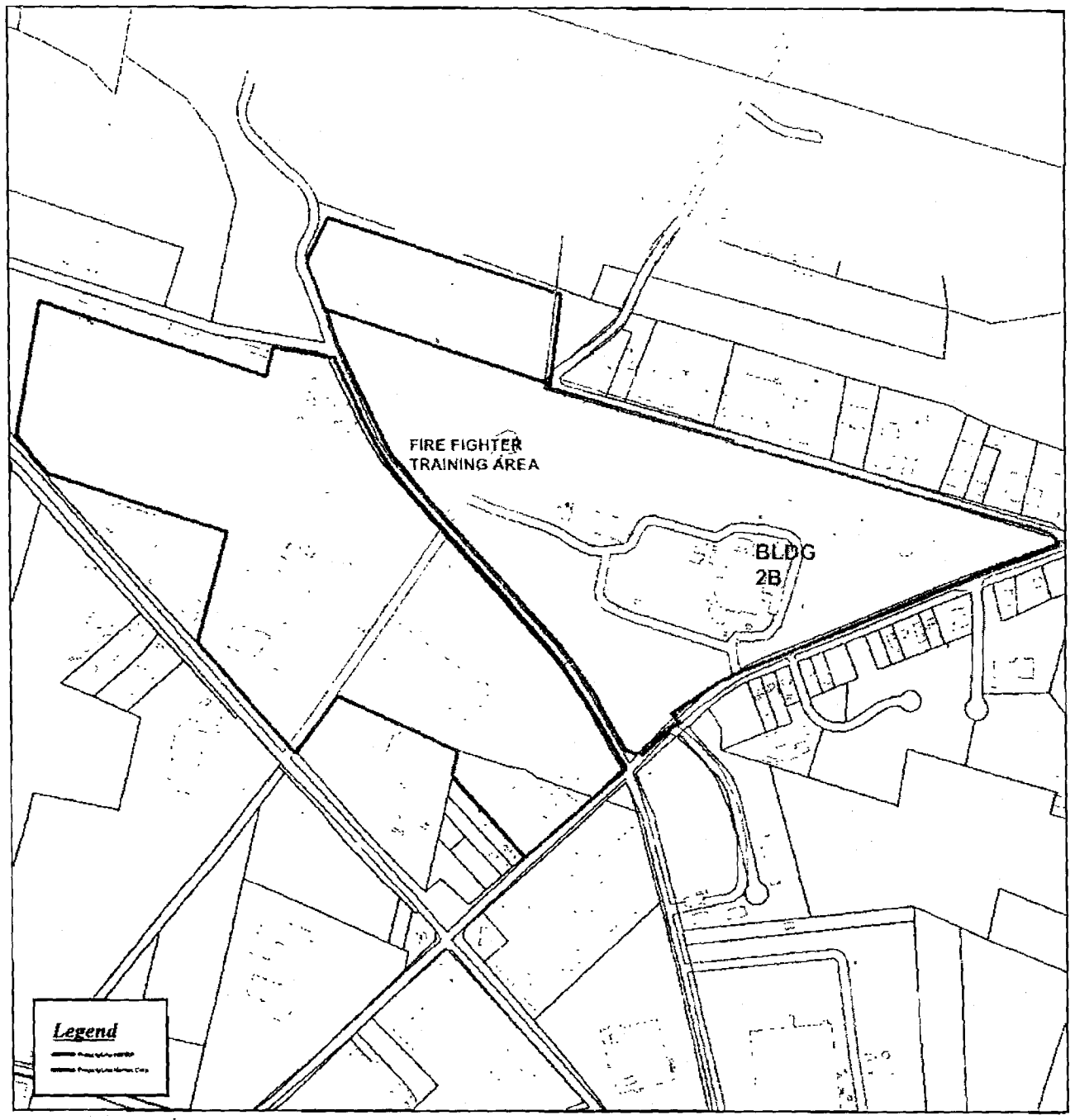


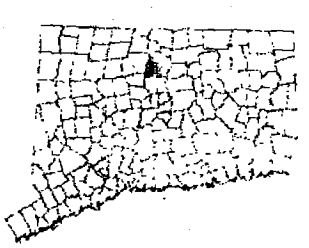
FIGURE 1-2
SITE LAYOUT MAP

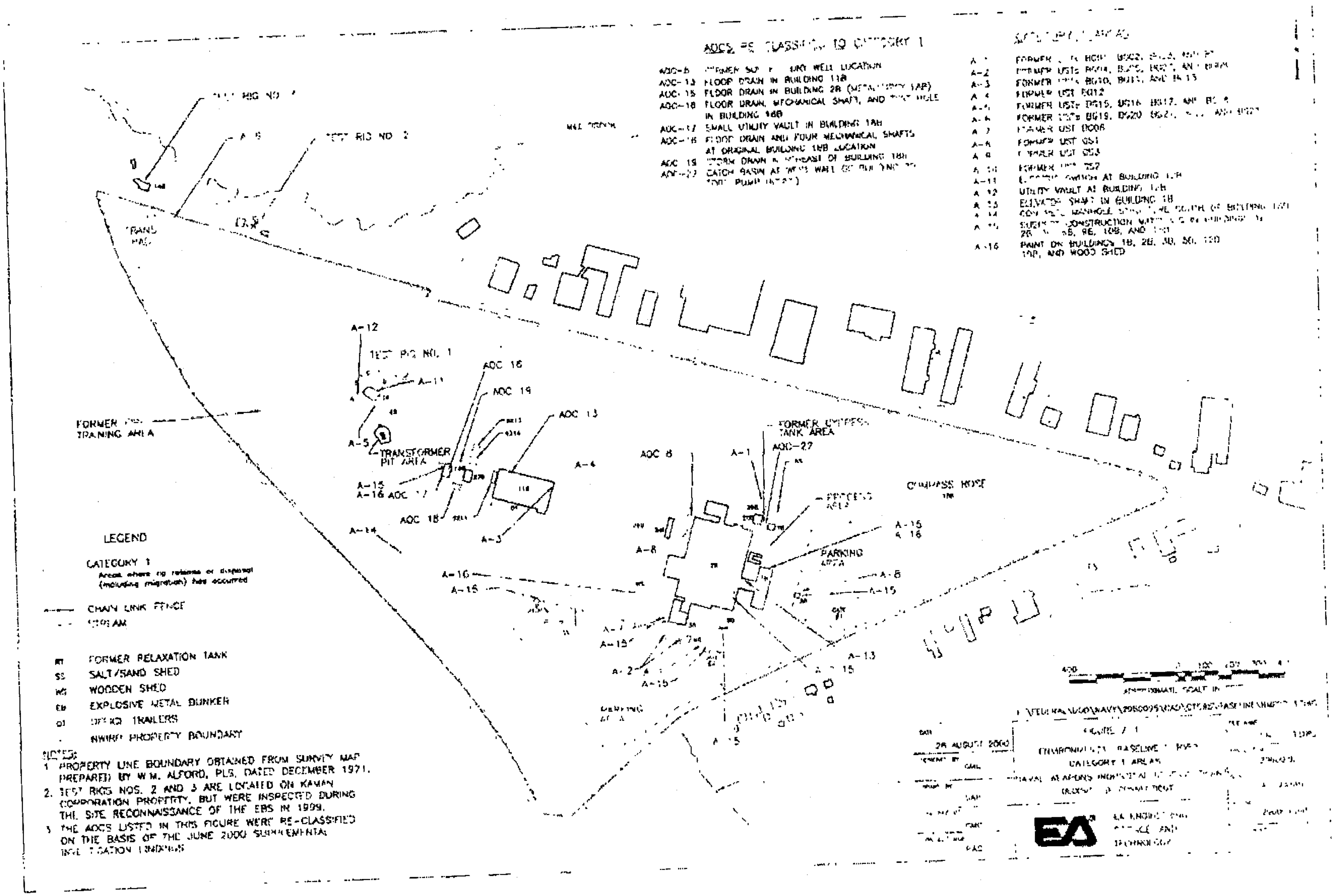
KAMAN CORPORATION
BLOOMFIELD, CONNECTICUT

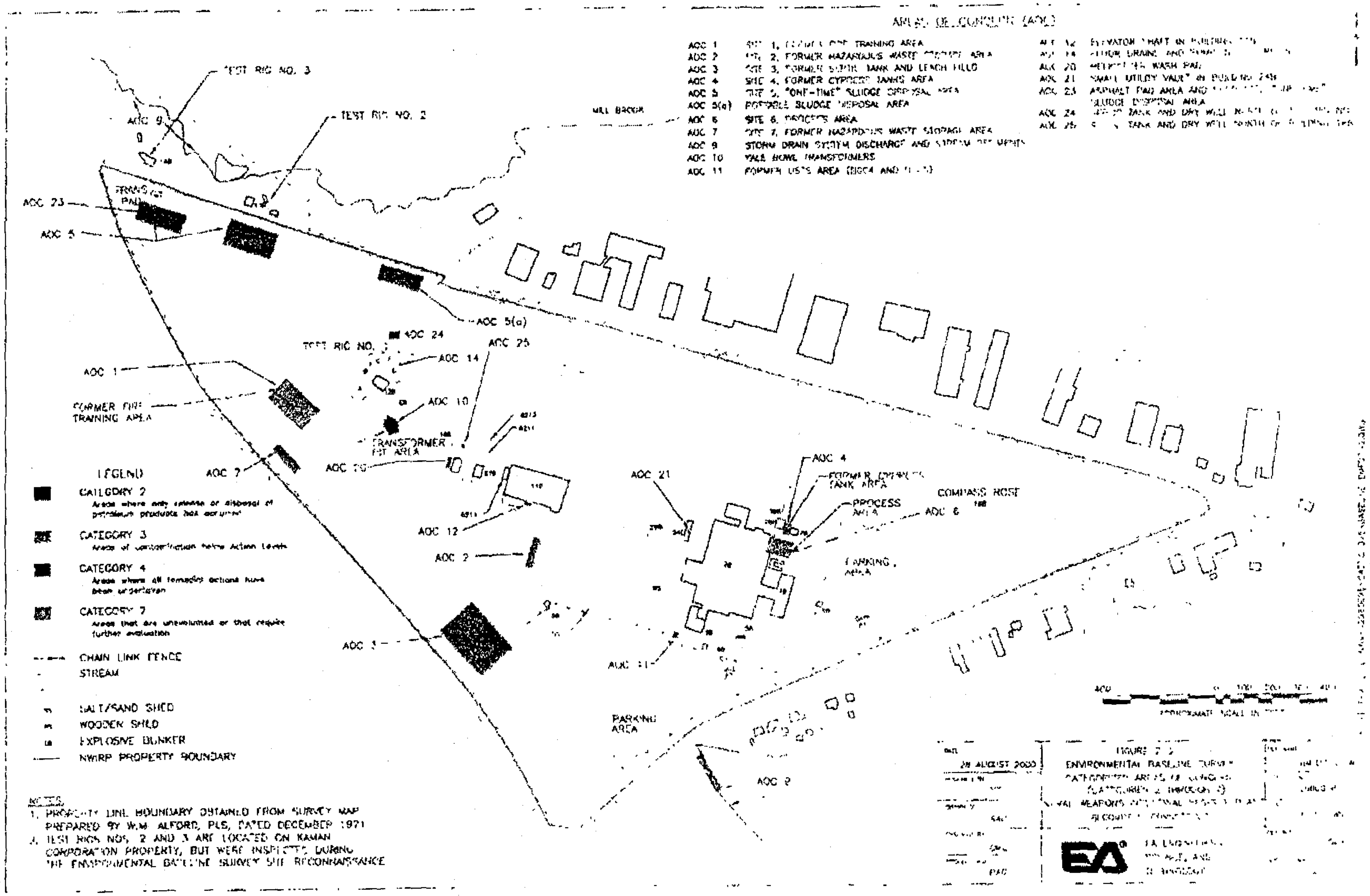
Compiled By: RJD	Date: 12-13-06
Reviewed By: GTB	Drawn By: MRH
Job Number: 08787-11	Filename:SITE LAYOUT.MXD

0 290 580 1,160 1,740 2,320 2,900
Feet

GZA GeoEnvironmental Inc




ADCS RE-CLASSIFIED TO CATEGORY 1
AOC-13 FLOOR DRAIN IN BUILDING 11B
AOC-17 SMALL UTILITY VAULT IN BUILDING 18B
AT ORIGINAL BUILDING 18B LOCATION
FORMER UST 0006
FORMER UST 051
FORMER UST 053
UTILITY VAULT AT BUILDING 12B
ELEVATOR SHAFT IN BUILDING 18
TEST RIG NO. 1
TEST RIG NO. 2
A-12
A-11
A-5
A-15
A-16
A-14
A-13
A-8
A-7
A-4
A-3
A-2
A-1
AOC 16
AOC 19
AOC 13
AOC 18
AOC 8
AOC-27
FORMER CYPRESS TANK AREA
TRANSFORMER PIT AREA
FORMER TRAINING AREA
COMPASS ROSE
PARKING AREA
LEGEND
CATEGORY 1
Areas where no release or disposal (including migration) has occurred
CHAIN LINK FENCE
FORMER RELAXATION TANK
SALT/SAND SHED
WOODEN SHED
EXPLOSIVE METAL BUNKER
NWIRP PROPERTY BOUNDARY
NOTES:
1. PROPERTY LINE BOUNDARY OBTAINED FROM SURVEY MAP PREPARED BY W.M. ALFORD, PLS, DATED DECEMBER 1971.
2. TEST RIGS NOS. 2 AND 3 ARE LOCATED ON KAMAN CORPORATION PROPERTY, BUT WERE INSPECTED DURING THE SITE RECONNAISSANCE OF THE EBS IN 1999.
3. THE AOCS LISTED IN THIS FIGURE WERE RE-CLASSIFIED ON THE BASIS OF THE JUNE 2000 SUPPLEMENTAL INVESTIGATION FINDINGS
28 AUGUST 2000
CATEGORY 1 AREAS
EA



TEST RIG NO. 3
TEST RIG NO. 2
AOC 9
MILL BROOK
AOC 23
AOC 5
AOC 5(a)
TEST RIG NO. 1
AOC 24
AOC 25
AOC 14
AOC 1
FORMER FIRE TRAINING AREA
AOC 10
TRANSFORMER PIT AREA
AOC 7
AOC 20
AOC 12
AOC 2
AOC 3
AOC 21
AOC 4
FORMER CYPRESS TANK AREA
PROCESS AREA
AOC 6
COMPASS ROSE
PARKING AREA
AOC 11
AOC 8
LEGEND
CATEGORY 2
CATEGORY 3
CATEGORY 4
CATEGORY 7
Areas that are unevaluated or that require further evaluation
CHAIN LINK FENCE
STREAM
SALT/SAND SHED
WOODEN SHED
EXPLOSIVE BUNKER
NWIRP PROPERTY BOUNDARY
AOC 1 SITE 1, FORMER FIRE TRAINING AREA
AOC 2 SITE 2, FORMER HAZARDOUS WASTE STORAGE AREA
AOC 4 SITE 4, FORMER CYPRESS TANKS AREA
AOC 5(a) POSSIBLE SLUDGE DISPOSAL AREA
AOC 6 SITE 6, PROCESS AREA
AOC 7 SITE 7, FORMER HAZARDOUS WASTE STORAGE AREA
AOC 9 STORM DRAIN SYSTEM DISCHARGE AND STREAM SEDIMENTS
AOC 10 YALE BOWL TRANSFORMERS
28 AUGUST 2000
ENVIRONMENTAL BASELINE SURVEY
NOTES:
1. PROPERTY LINE BOUNDARY OBTAINED FROM SURVEY MAP PREPARED BY W.M. ALFORD, PLS, DATED DECEMBER 1971
2. TEST RIGS NOS. 2 AND 3 ARE LOCATED ON KAMAN CORPORATION PROPERTY, BUT WERE INSPECTED DURING THE ENVIRONMENTAL BASELINE SURVEY SITE RECONNAISSANCE

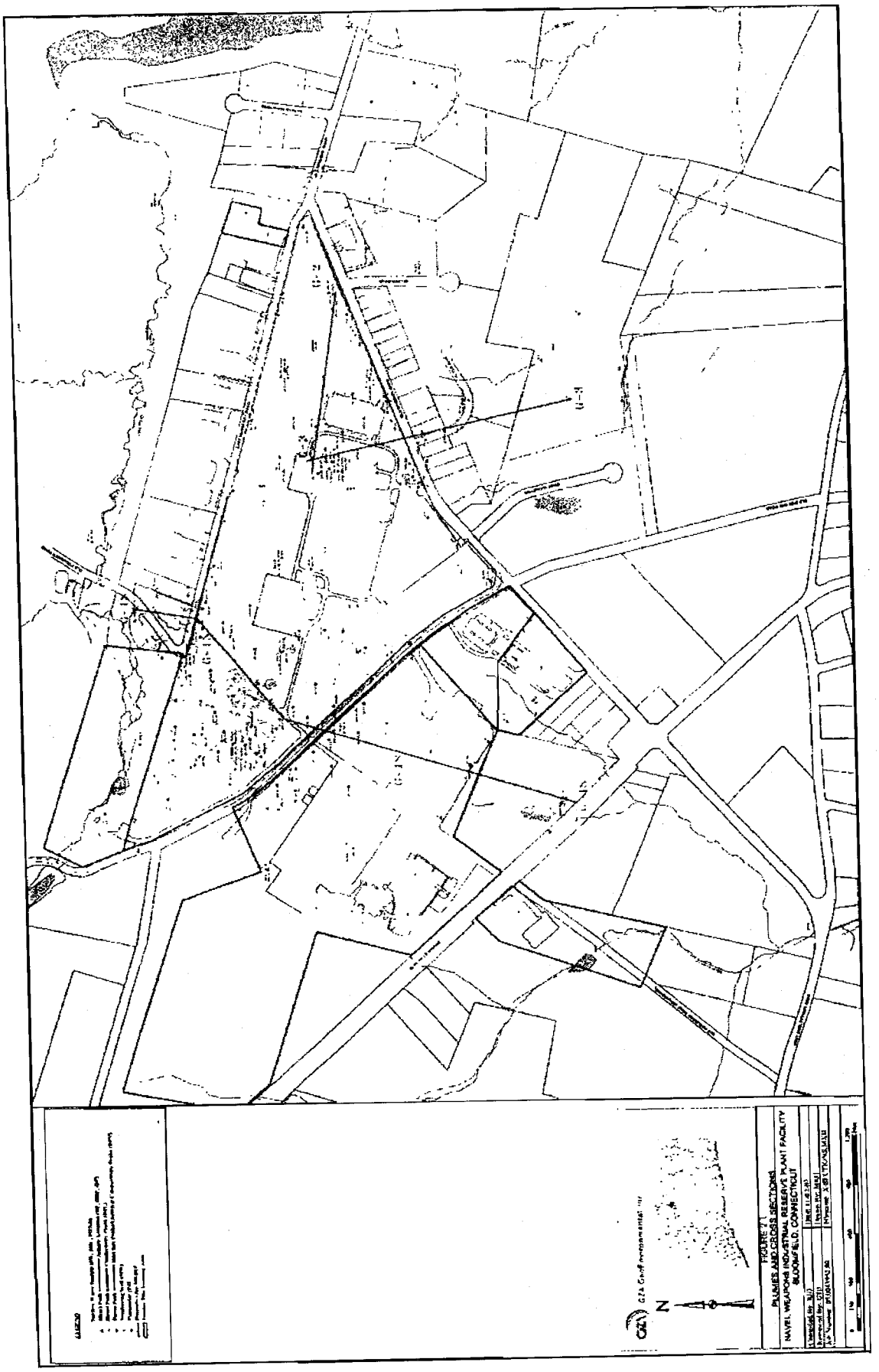
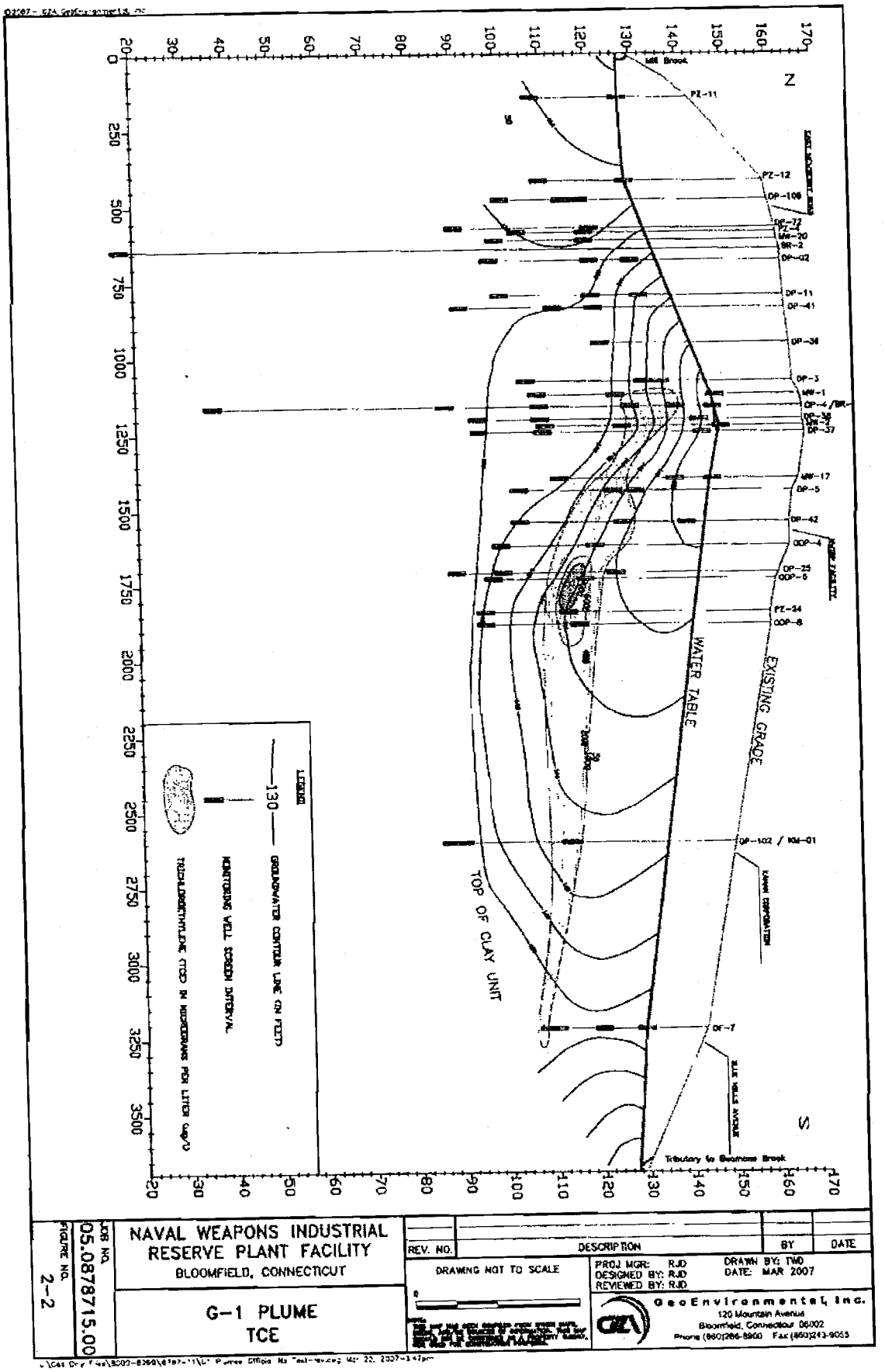


FIGURE 7-1
PLUMES AND CROSS-SECTIONS
NAVEL WEAPONS INDUSTRIAL RESERVE PLANT FACILITY
BLOOMFIELD, CONNECTICUT
N



NAVAL WEAPONS INDUSTRIAL RESERVE PLANT FACILITY
BLOOMFIELD, CONNECTICUT

G-1 PLUME
TCE

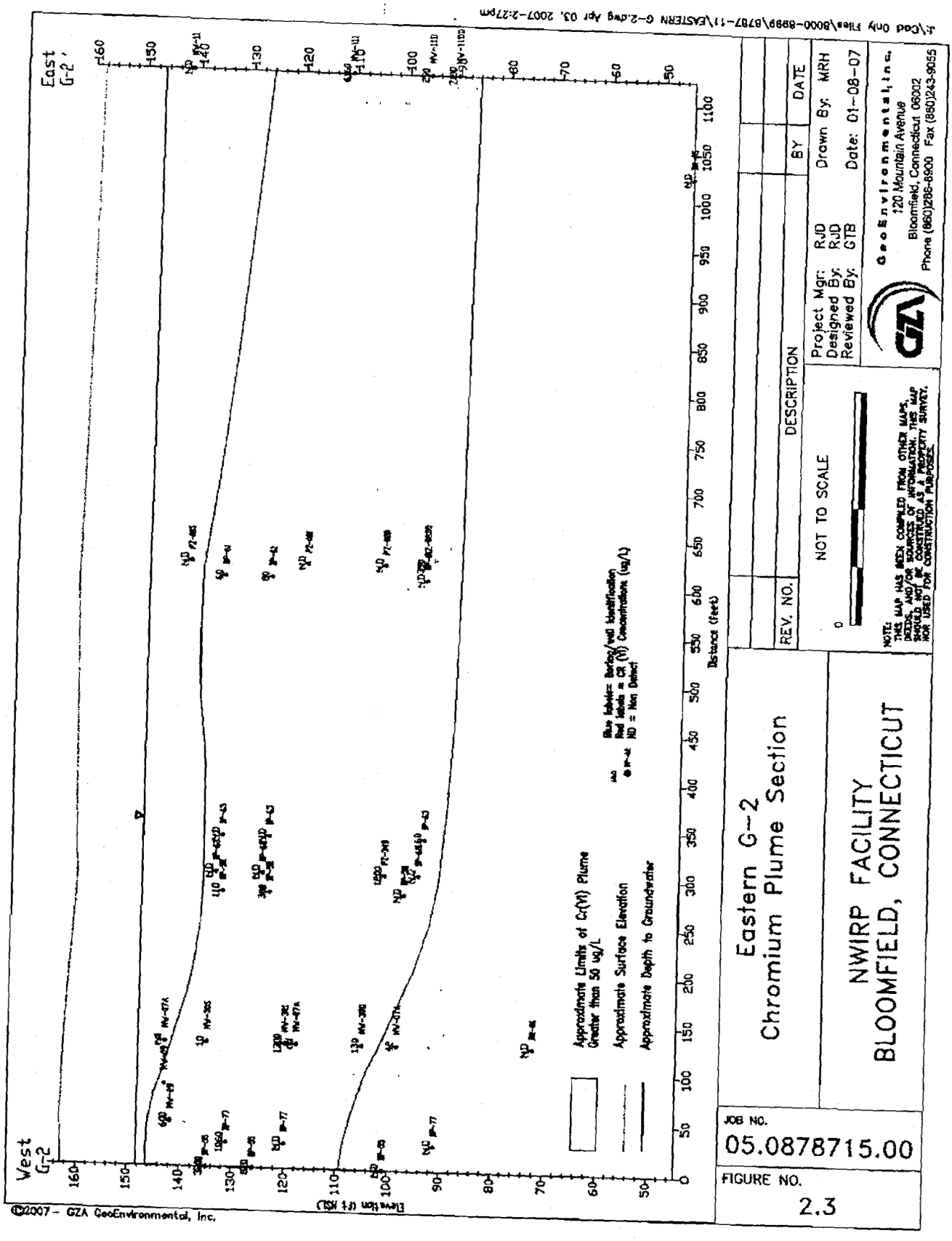
JOB NO. 05.0878715.00
FIGURE NO. 2-2

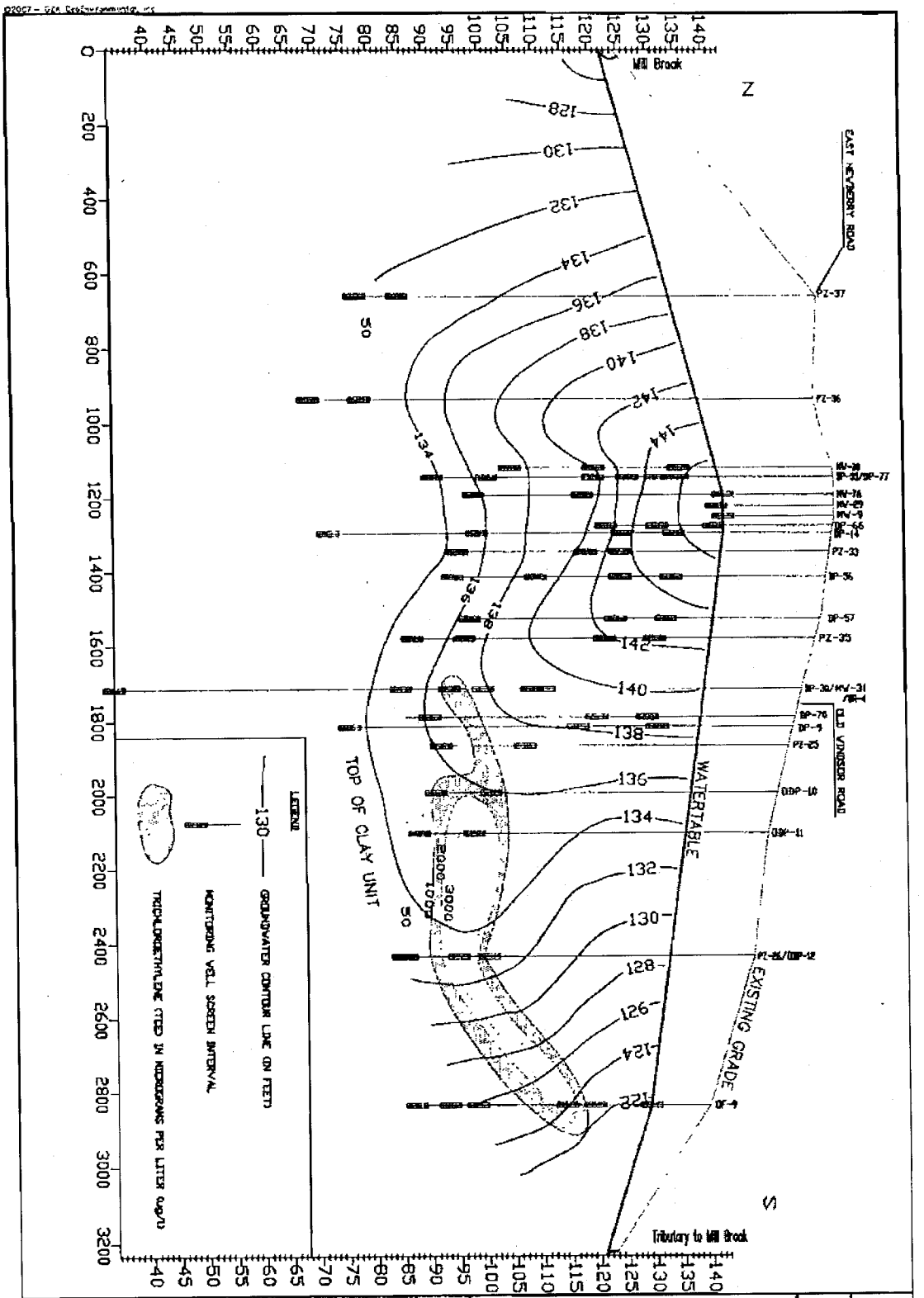
REV. NO.	DESCRIPTION	BY	DATE

DRAWING NOT TO SCALE

PROJ MGR: RJD
DESIGNED BY: RJD
REVIEWED BY: RJD
DRAWN BY: TWD
DATE: MAR 2007

GeoEnvironmental, Inc.
120 Mountain Avenue
Bloomfield, Connecticut 06002
Phone (860)286-8900 Fax (860)243-9055


West G-2
East G-2'
Eastern G-2
Chromium Plume Section
NWIRP FACILITY
BLOOMFIELD, CONNECTICUT
NOT TO SCALE
DESCRIPTION
REV. NO.
DATE
BY
Project Mgr: RJD
Designed By: RJD
Reviewed By: GTB
Drawn By: MRH
Date: 01-08-07
GeoEnvironmental, Inc.
120 Mountain Avenue
Bloomfield, Connecticut 06002
Phone (860)286-8900 Fax (860)243-9055
JOB NO.
05.0878715.00
FIGURE NO.
2.3
Approximate Limits of Cr(VI) Plume Greater than 50 ug/L
Approximate Surface Elevation
Approximate Depth to Groundwater
Blue Italics= Boring/well Identification
Red labels = CR (VI) Concentration (ug/L)
ND = Non Detect
Distance (feet)
Elevation (ft MSL)
©2007 - GZA GeoEnvironmental, Inc.


Mill Brook
Z
S
EAST HEATHERRY ROAD
OLD WINDSOR ROAD
TOP OF CLAY UNIT
WATERTABLE
EXISTING GRADE
Tributary to Mill Brook
LEGEND
GROUNDWATER CONTOUR LINE (IN FEET)
MONITORING WELL SCREEN INTERVAL
TRICHLOROETHYLENE (TCE) IN MICROGRAMS PER LITER (ug/l)
NAVEL WEAPONS INDUSTRIAL RESERVE PLANT FACILITY
BLOOMFIELD, CONNECTICUT
G-3 PLUME
TCE
JOB NO. 05.0878715.00
FIGURE NO. 2-4
REV. NO. DESCRIPTION BY DATE
DRAWING NOT TO SCALE
PROJ MGR: RJD
DESIGNED BY: RJD
REVIEWED BY: RJD
DRAWN BY: TMD
DATE: MAR 2007
GeoEnvironmental, Inc.
120 Mountain Avenue
Bloomfield, Connecticut 06002
Phone (860)286-8900 Fax (860)243-9055

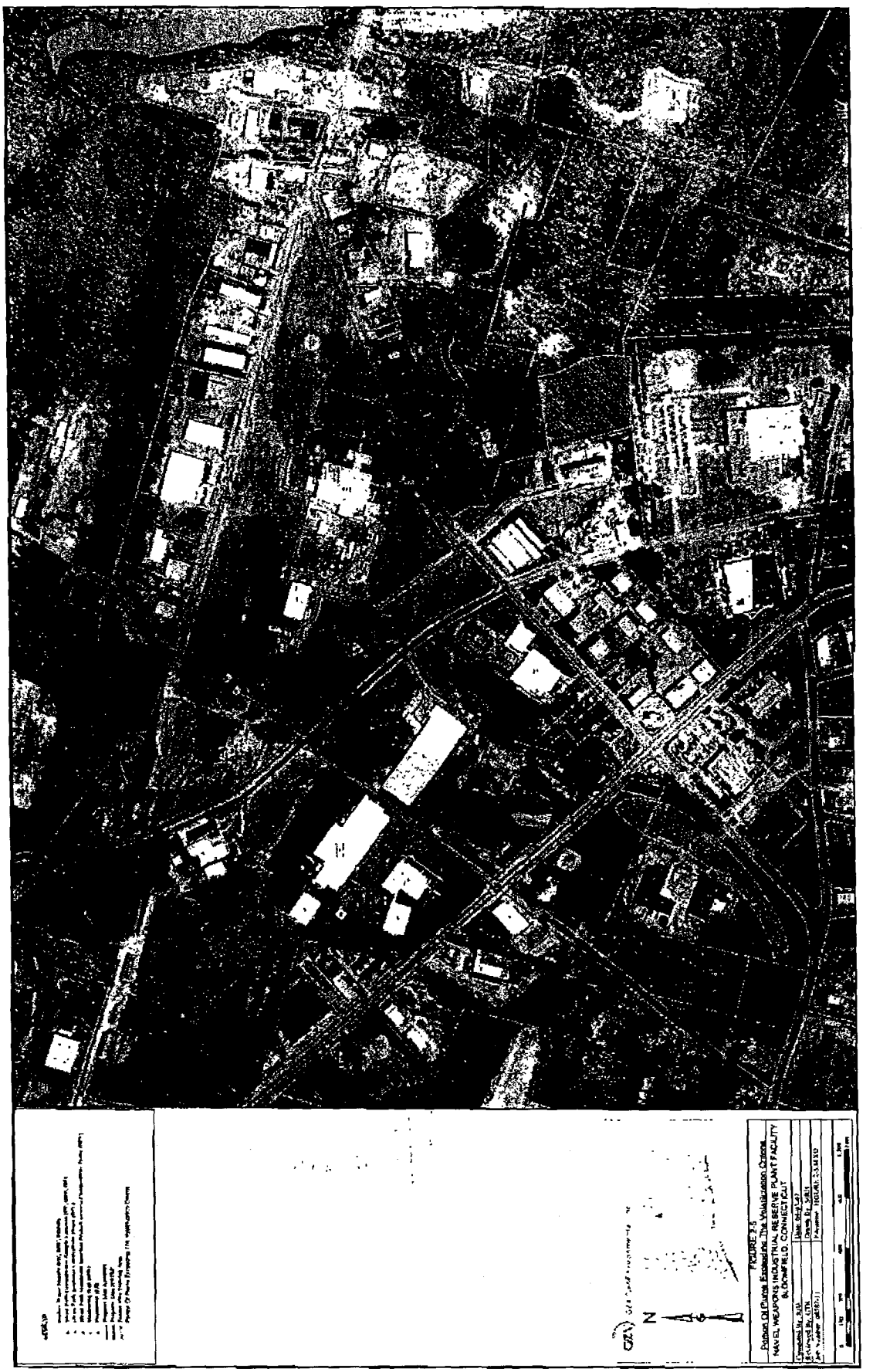


FIGURE 2-5
Pratton Old Drums Excavated - The Visualization Options
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT FACILITY
BLOOMFIELD, CONNECTICUT

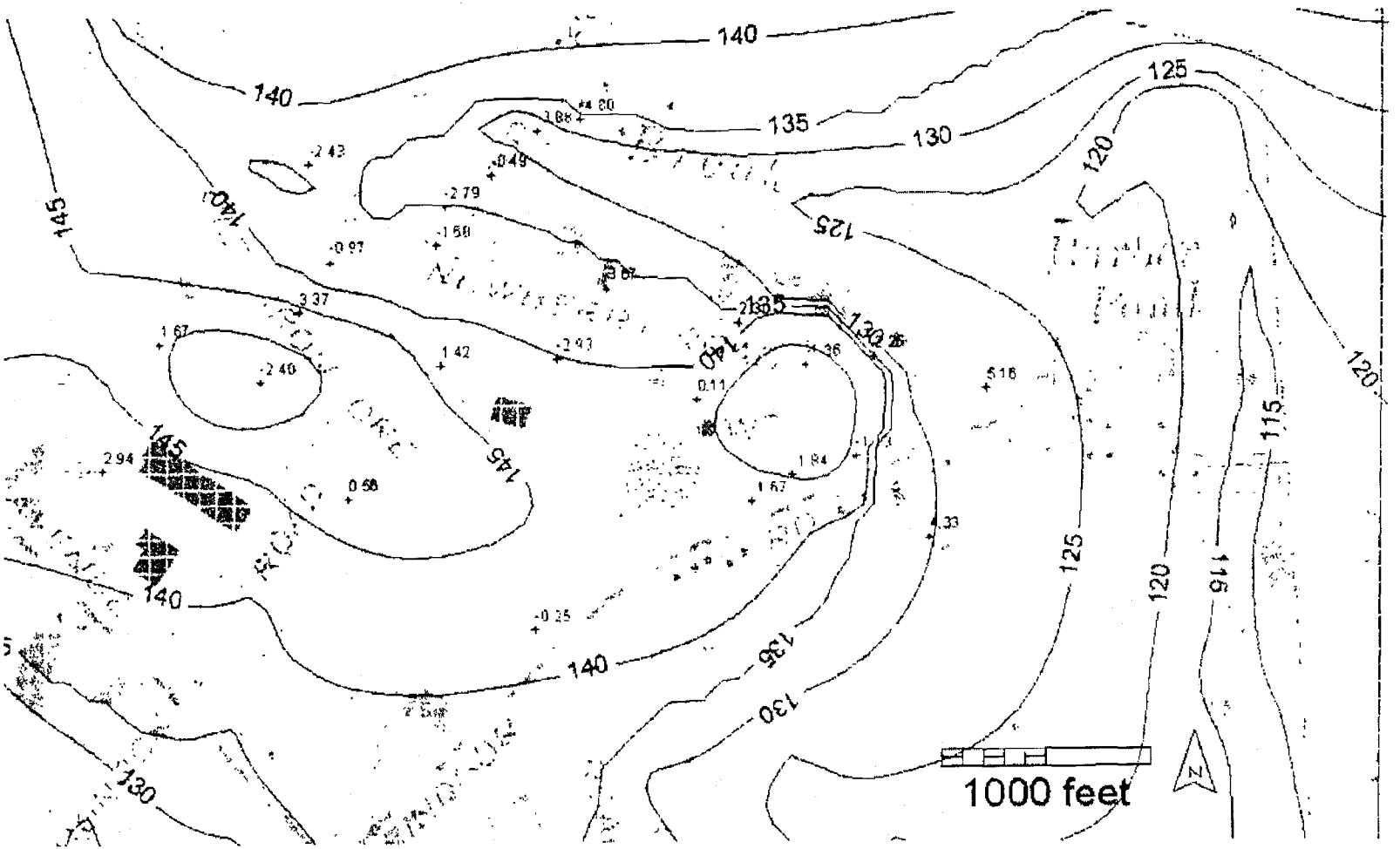


Figure 1 Model Calculated Water Table

February 2006

Figure 3-2

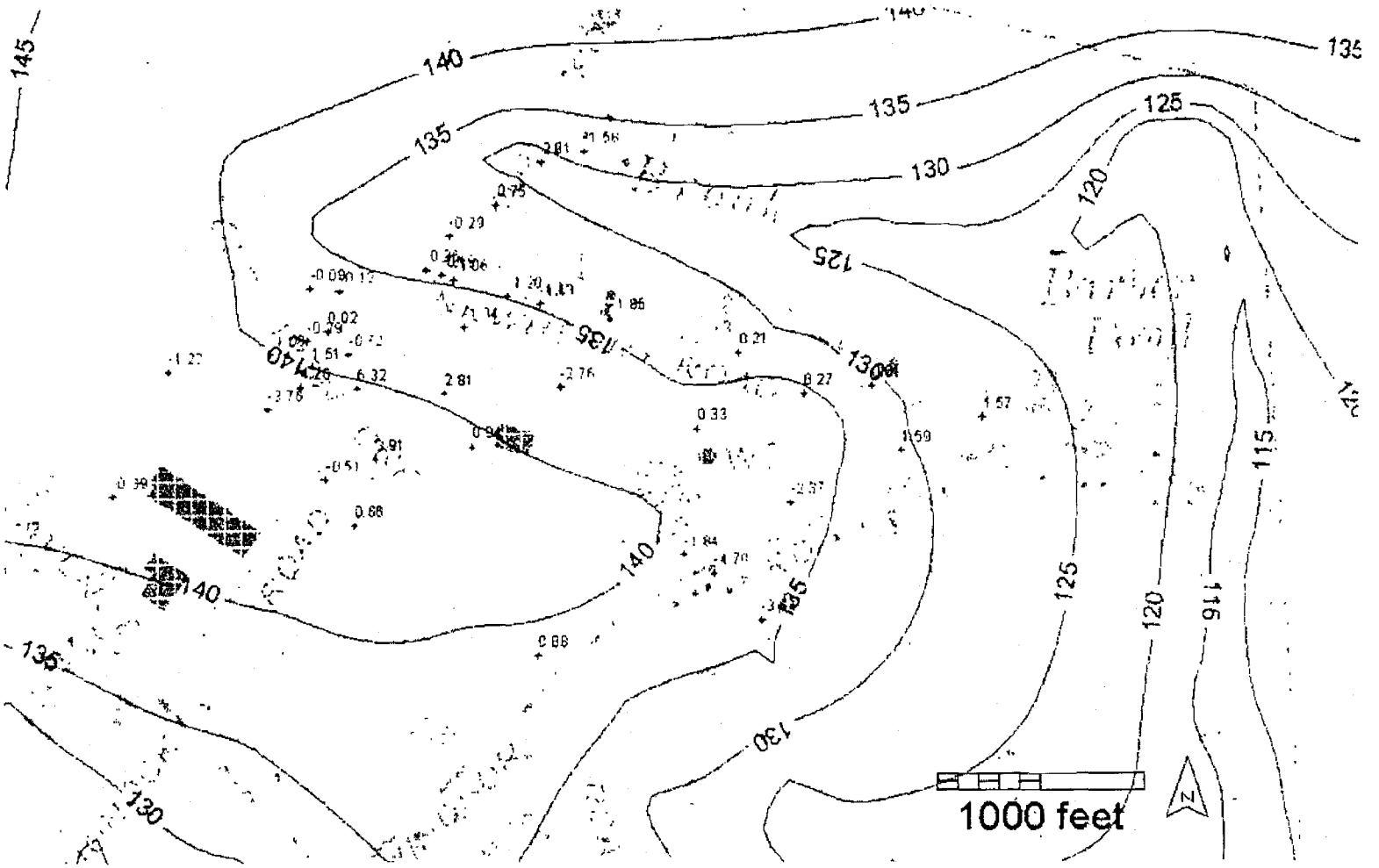


Figure 2 Model Calculated Intermediate Depth Water Levels

February 2006

Figure 3-3

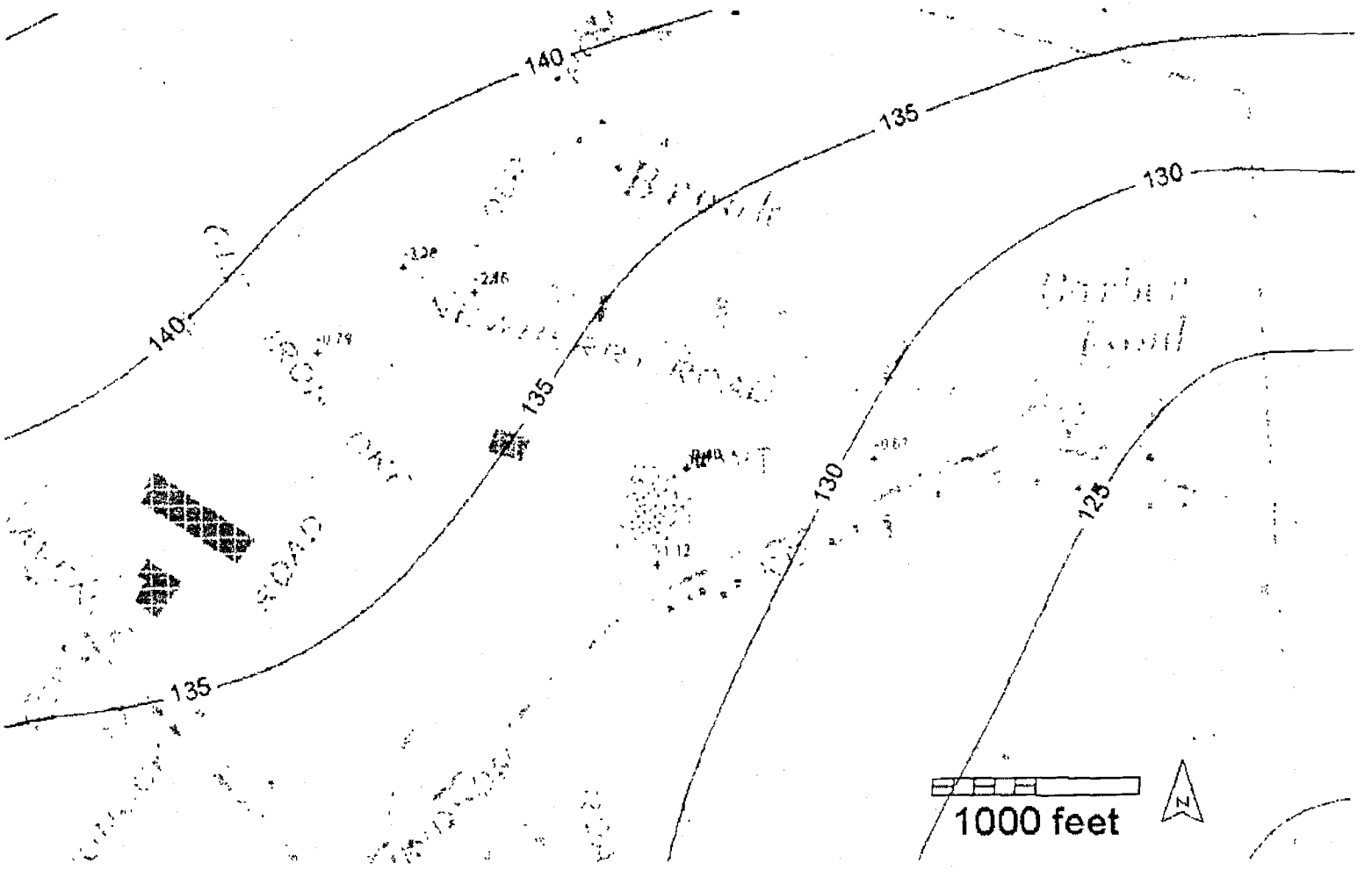


Figure 3 Model Calculated Deep Water Levels

February 2006

Figure 3-4

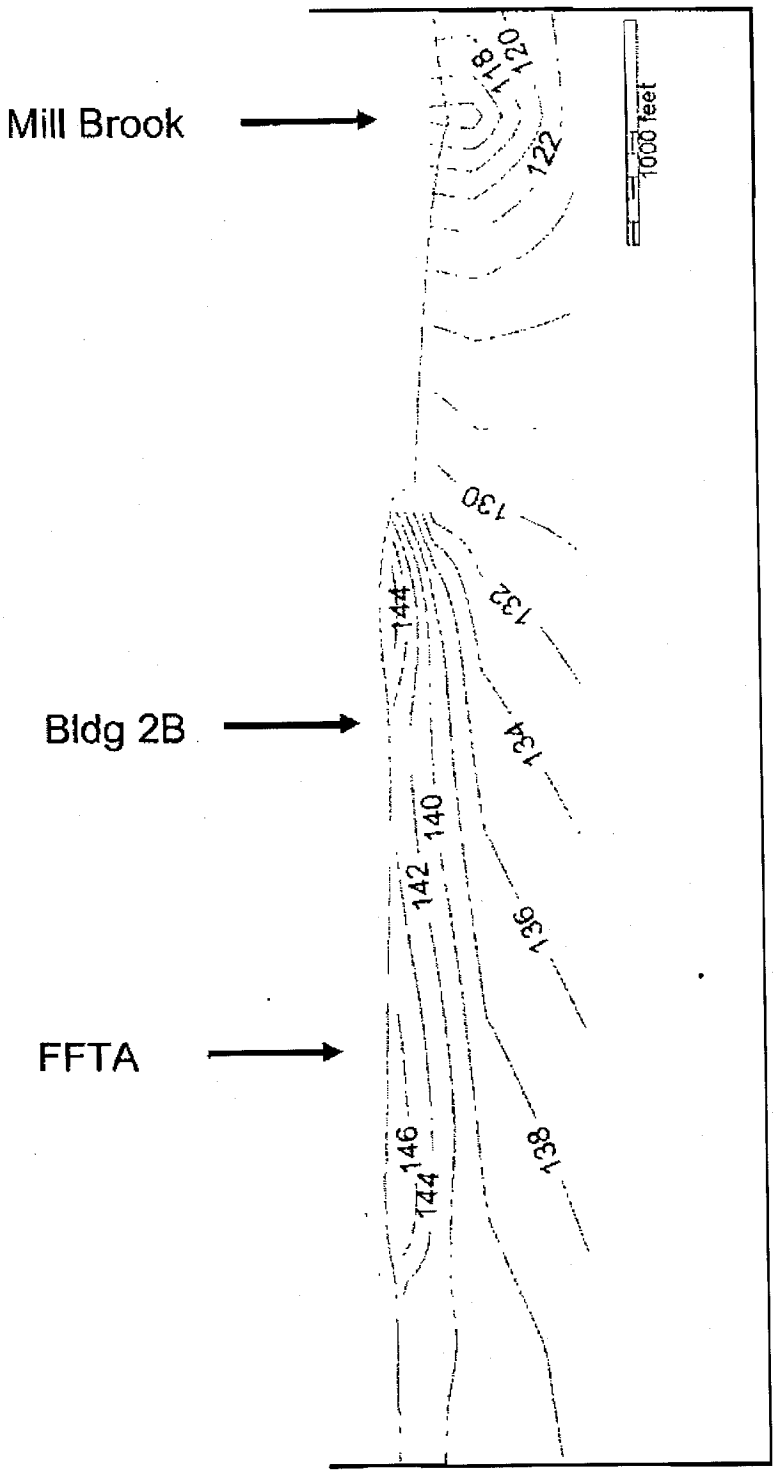


Figure 4 Model Calculated Water Levels — East-West Section

February 2006

Figure 3-5

LEGEND
GZA GeoEnvironmental, Inc.
N
FIGURE 3-8
GROUNDWATER CONTOUR MAP - TOP OF CLAY
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT FACILITY
BLOOMFIELD, CONNECTICUT


FIGURE 3-7
GROUNDWATER CONTOUR MAP - SHALLOW
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT FACILITY
BLOOMFIELD, CONNECTICUT
N


FIGURE 3-4
GROUNDWATER CONTOUR MAP - MIDDLE
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT FACILITY
BLOOMFIELD, CONNECTICUT
N

FIGURE 3-10
HISTORIC (1963) USGS GEOLOGIC MAP

NAVEL WEAPONS INDUSTRIAL RESERVE PLANT FACILITY
BLOOMFIELD, CONNECTICUT

Compiled By: RJD	Date: 12-08-04
Reviewed By: GTB	Drawn By: MRH
Job Number: 08787-02	Filename: 8787-02GEOLOGIC.MXD

0 0.1 0.2 0.4 0.6 0.8 1 Mile

GZA GeoEnvironmental Inc

N

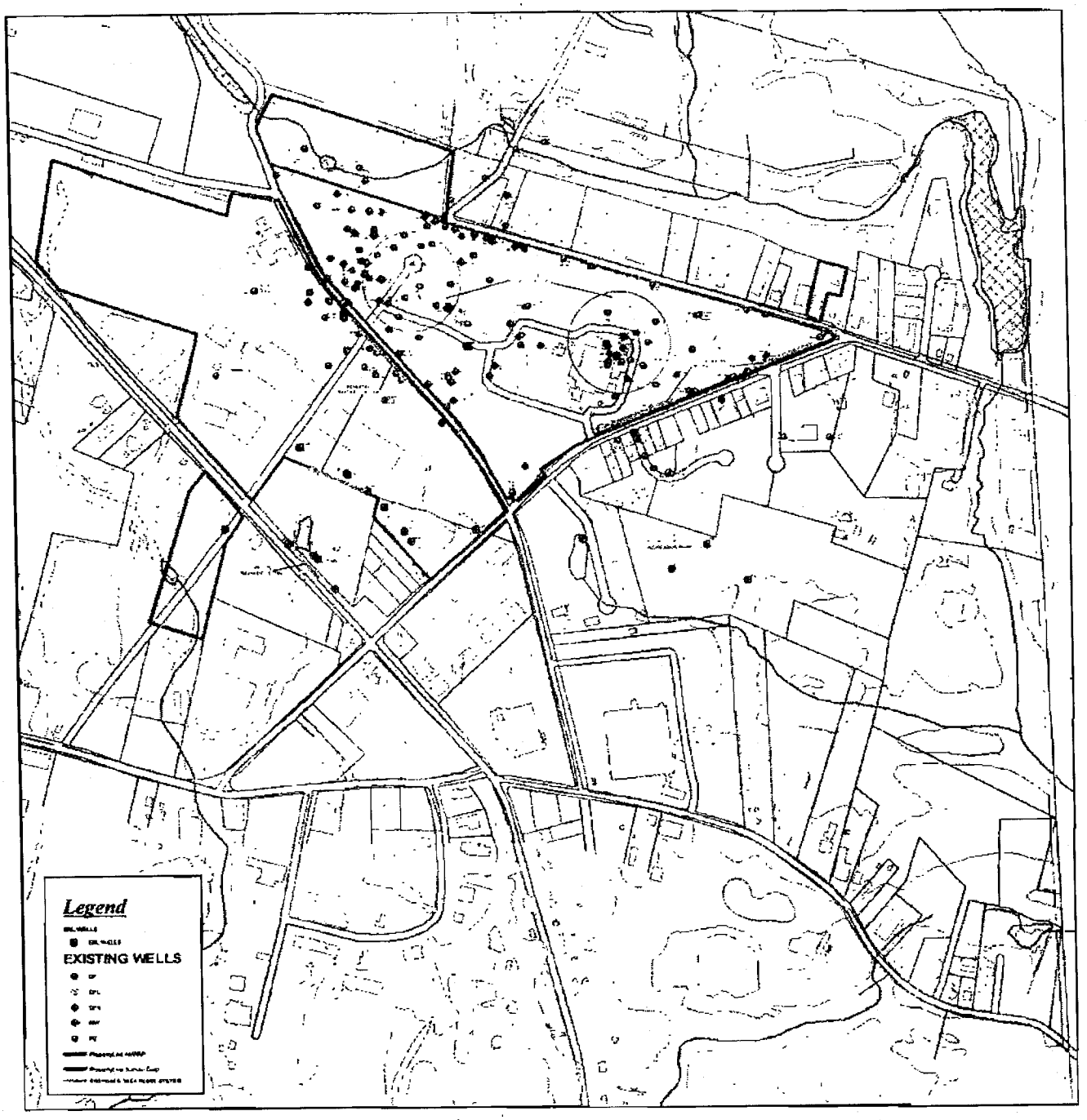


FIGURE 8-1
PROPOSED REMEDIATION SYSTEM LOCATIONS

KAMAN CORPORATION
BLOOMFIELD, CONNECTICUT

Compiled By: RJD	Date: 12-13-06
Reviewed By: GTB	Drawn By: MRH
Job Number: 08787-11	Filename:PROPOSED REMEDIATION SYSTEM LOCATIONS.MXD

0 410 820 1,640 2,460 3,280 4,100 Fe

GZA GeoEnvironmental, Inc